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## LOW BACK PAIN

### FROM THE ORTHOPEDIC STANDPOINT\*

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THE FREQUENCY with which low back disturbances are encountered constantly brings them to the attention of practically every practitioner of medicine. In the United States, affections of the low back cause more loss of man hours in industry than any other single condition. The marked etiologic variance and the difficulties often encountered in the treatment of low back pain make this problem one of the most formidable in the field of orthopedic surgery. Low back pain or pain referred from the low back must be looked upon as only a symptom and should not be considered a diagnosis. The general use of the X ray has proven to be a great factor in improving the accuracy in the diagnosis of the disturbances affecting the low back. Diagnostic fads regarding this problem are known to all of us and have included lumbago in men, tipped uterus in women, sacro-iliac strain and now the disc.

Cases presenting pain in the low back as the chief complaint may be classified into four major groups namely:

- I. Congenital anomalies.
- II. Acquired lesions of musculoskeletal system.
- III. Visceral lesions.
- IV. Psychosomatic causes.

I will discuss briefly some of the congenital and acquired causes of back pain, and the other panelists will discuss some of the other causes of this rather difficult and complex problem.

#### 1. Congenital Anomalies

Nine of the more frequently encountered anomalies follow:

1. *Elongation of the transverse process or processes of the 5th lumbar vertebra*—In this particular

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condition, the transverse process or processes of the 5th lumbar vertebra may be abnormally long so as to impinge upon the ilium and thereby cause the formation of a painful bursa. Treatment in these conditions consists of surgically shortening the offending elongated transverse process.

2. *Sacralization of the 5th lumbar vertebra*—This is the condition in which the transverse process of the 5th lumbar vertebra is long, fishtail shaped and may form an articulation or become fused to the sacrum, ilium or both. A certain percentage of these cases will produce back pain. The wearing of a low back support will often reduce the amount of pain; however, in the severe case, it may become necessary to do a fusion operation.

3. *Spina bifida occulta*—This condition is characterized by clefts in the laminae which lead to a congenitally weak back and, therefore, more prone to injury. Treatment of this particular condition consists of instructions in proper bending and lifting, back strengthening exercises, the wearing of back supports and occasional surgical intervention.

4. *Variations of the spinous processes*—In cases where the neural arch has failed to fuse, the spinous process may be attached to only one of the two laminae with the result that there is underdevelopment of the ligamentous supports of the spinous process. In other cases, the spinous processes may be so wide that contact is made with the spinous process above and below causing painful bursal formation. The treatment consists of removal of the cause of the pain.

5. *Hemi-vertebra*—In this condition, only half of the vertebra forms with resulting scoliosis. Not uncommonly, this becomes a source of pain due to unbalancing of the back.

6. *Variations of the articular facets*—Normally, the lumbosacral articular surfaces occupy a transverse plane. If this plane is changed to an anterior posterior one as often occurs, there is a tendency for gravitational stress to take place and thereby cause low back pain. Treatment in these cases consists of the use of exercises and low back supports in the mild cases and fusion operation in the severe cases.

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7. *Spondylolisthesis*—This is the condition in which usually the fourth or fifth lumbar vertebrae together with the spinal column above it slip forward on the vertebra below it. In these cases, the pain may be either in the low back alone or it may be associated with leg radiation. The type of treatment to be used in these cases depends upon the severity of the pain. In the mild cases, instructions in proper bending and lifting and low back exercises often suffice. In moderately severe cases, some form of low back support becomes necessary while in the cases with severe pain, surgical operation may become necessary. The surgery may consist of either removing the complete posterior component of the involved vertebra or it may consist of removal of the component plus spine fusion or spine fusion alone.

8. *Variations of the lumbosacral angle*—In the average case, the angle of the lumbosacral articulation is approximately 60 degrees. When an increase in the lumbosacral angle takes place, a so-called congenital hollow back will result. This is characterized by the forward tilting of the pelvis on the lumbar spine. It results in lordosis with accompanying pain.

9. *Variation as to number of vertebrae*—The usual number of vertebrae in the lumbar region is five. The tall thin individual may have six lumbar vertebrae thus rendering him much more susceptible to low back strain. The short squatty individual may have only four lumbar vertebrae which should theoretically give him a stronger back.

## **II. Acquired Lesions of Musculoskeletal System**

### **A. Postural Defects**

1. *Foot disturbances*—Any pronated, flat or spastic flat foot may cause pain to radiate up the leg and thereby be confused with sciatic pain. Metatarsalgia will infrequently cause pain to radiate up the lower extremity, simulating sciatic disturbances.

2. *Tight heel cords*—In these conditions, regardless of the cause, pain may radiate up the leg from the heel.

3. *Increased lumbar lordosis*—Increased lumbar lordosis is usually due to poor posture from relaxed musculature or even from mild paralysis due to polio. The increase in the lumbar lordosis will cause back pain.

4. *Decreased lumbar lordosis*—This condition is generally due to increased muscle spasm and may result from many causes.

5. *Unequal leg lengths*—Unequal leg lengths will cause a tilting of the pelvis toward the shorter side thus producing a disruption of the normal low back mechanics and in turn causing pain.

6. *Hip flexion contractures*—In these cases, the patient will develop a lordosis in order for his posture to be kept erect, and in so doing low back

pain not infrequently develops. This is felt to be due to strain on the lumbosacral ligamentous structures.

### **B. Ligamentous Injuries**

1. *Lumbosacral strain*—This particular joint is particularly prone to injury because of the fact that it is situated at a critical level between the movable and immovable portions of the spine. It is safe to say that the vast majority of low back ligamentous strains take place at this particular joint. The diagnosis is often difficult to make. In these cases, flexion of both thighs on the abdomen with the knees flexed often produces pain at the lumbosacral articulation.

2. *Sacro-iliac strain*—While this diagnosis was a rather common one several years ago, the newer contingent of trained orthopedists seldom if ever make such a diagnosis. For many years, radiologists tried to demonstrate luxations of the sacro-iliac joints in low back pain, without success.

3. *Interspinous ligaments*—These ligaments are rather important in maintaining stability of the spine, because they limit the range of motion of one vertebra upon another. When these ligaments rupture or stretch one may even sustain a ruptured intervertebral disc or a compressed fracture of the body of a vertebra. In simple stretching of the interspinous ligament, one will find localized tenderness at the injured level.

4. *Ligamentum flavum*—A diagnosis of such an injury can be made only at operation. It would be difficult to make a diagnosis of torn ligamentum flavum clinically.

5. *Facet syndrome*—This condition like sacro-iliac strain is of late seldom diagnosed as such. This diagnosis is made on suspicion rather than on actual clinical signs.

6. *Coccygodynia*—In this condition, X rays reveal no evidence of fracture but may reveal increased angulation of the coccyx. The patient is generally quite tender over the coccygeal region and on rectal examination, one may find a rather tight levator ani. These patients like to sit on one buttock rather than squarely on both buttocks in order to get relief. These patients respond to heat, massage and injection therapy and occasionally surgical removal of the coccyx becomes necessary but not with uniformly good results.

7. *Herniated fat nodules*—Herniated fat nodules often serve as a cause of low back pain. In this particular condition, a tear or a rent in the fascia of the lower back takes place with the result that fatty nodules herniate through the opening. The fatty nodules then become rather painful to the examining finger or whenever pressure is made on them. Treatment is by injection therapy and surgical interference in stubborn cases.

### C. The Intervertebral Disc Injury

This lesion has gained very wide popularity since it was described in the middle thirties by Mixter and Barr. It may exist with or without nerve root involvement. Protrusion takes place postero-central, postero-lateral, or superiorly or inferiorly into the body of the vertebra above or below the disc such as occurs in Schmorl's nodes. The diagnosis is made by a careful orthopedic and neurological examination together with a myelogram. In certain areas of the country, discograms are done as an aid in diagnosis of disc rupture. Treatment is usually conservative and consists of bedrest, analgesics, muscle relaxants, heat and supports. Operation is reserved for the cases which fail to respond to conservative treatment. At surgery, one may either remove the disc only or may do a combined removal of the disc and spine fusion.

### D. Old Fractures

Recent fractures should be easily diagnosed and, therefore, should present no particular problem in diagnosis or treatment. However, old fractures do present problems because they cause low back pain after they have become apparently well-healed. This probably comes about because of disrupted motion at the facets, traumatic arthritis or from scarred, tight, inelastic ligaments.

### E. Chronic Arthritis

Arthritis of the low back is probably the most common of all diseases affecting this section of the anatomy. The most commonly found types of arthritis affecting the low back are: 1. rheumatoid arthritis; 2. osteoarthritis, and 3. gouty arthritis.

The hypertrophic spurring which is so common on the anterior margins of the vertebrae is the result of the wear and tear of life and should, therefore, not be looked upon as a disease. Many orthopedists have been labeling this type of lesion *osteophytosis* rather than as osteoarthritis. Individuals having severe osteophytosis are considered as being more susceptible to low back pain following acute or chronic strain. The symptoms in these cases are apt to persist for indefinite periods of time.

In rheumatoid arthritis, it may be difficult to make such a diagnosis particularly in the early stages. However, doing a sedimentation rate, latex or C-reactive protein tests may simplify matters.

In gouty arthritis, one will generally get a lead from the condition affecting other parts of the body such as the first metatarsophalangeal joints or the knees or the wrists. A rise in the blood uric acid will usually confirm the diagnosis.

### F. Metabolic Diseases

1. *Osteoporosis*—Of all the metabolic bone diseases affecting the spine, osteoporosis is definitely

the most common. This condition affects largely women and not infrequently is accompanied by compression fractures. Not infrequently, women affected by this condition have had a hysterectomy, a cholecystectomy and have been on a diet low in calcium content. The condition is largely found in post-menopausal patients but is not necessarily limited to these people. The important thing about osteoporosis is that the condition may be a symptom of some other disease rather than a disease *per se*. Not infrequently, diseases of the parathyroid glands or thyroid glands will produce osteoporosis of the spine. In a patient under 55 years of age, every diagnostic aid should be utilized in order to rule out some condition other than osteoporosis. These tests often include open biopsy, marrow examination and 24-hour urine calcium determination. Serum calcium, serum phosphorous, alkaline and acid phosphates, total serum protein levels, serum albumin-globulin ratio and electrophoresis of plasma protein also aid in establishing a diagnosis in these cases. X rays of skull together with intravenous pyelography are other tests very commonly employed. In addition to lesions due to thyroid or parathyroid disease, other conditions producing osteoporosis are rheumatoid arthritis, Paget's disease or even polycythemia vera.

2. *Paget's disease*—This can easily be diagnosed by the typical X-ray appearance of the bones.

3. *Osteitis condensans ilii*—This too can easily be diagnosed by the X ray.

### G. Infections

1. *Pyogenic infections*—These conditions are diagnosed by the acute symptoms which may at first be rather mild and difficult to diagnose; however, laboratory studies and X rays often help in establishing a diagnosis of pyogenic infection.

2. *Brucellosis*—A careful history plus laboratory tests will aid materially in establishing such a diagnosis.

3. *Tuberculosis*—This condition has been largely eliminated since the pasteurization of milk but the occasional case is still seen and, therefore, the condition must be kept in mind. This particular condition has a typical X-ray appearance; nevertheless, it could be confused with other lesions. A direct needle biopsy plus the usual laboratory tests should prove of value in establishing such a diagnosis.

### H. Neoplastic Diseases

#### 1. Benign:

- A. Exostoses
- B. Tumor of the Cauda Equina
- C. Intradural tumors
- D. Extradural tumors
- E. Hemangioma

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2. *Malignant:*

- A. *Multiple myeloma*—This can be diagnosed by the X-ray appearance plus X rays of the skeleton showing the typical punched-out areas in the skull, ribs and other parts of the bony skeleton. This condition may also present a reversed albumin globulin blood ratio and Bence Jones's protein in the urine.
- B. Malignant tumors of the cord.
- C. Metastatic malignant tumors.
- D. Primary tumors of the bodies of the vertebrae.

**III. Visceral Lesions Causing Low Back Pain**

1. *Gastrointestinal diseases*—A spastic or an overloaded colon is not infrequently the cause of low back pain because of irritation of the lumbar nerves. Intra-abdominal adhesions or chronic appendicitis may be the source of pain referred to the low back.

2. *Urologic disease*—Any disturbance of the genitourinary tract may cause low back disturbance. The most notorious genitourinary condition causing low back pain is chronic prostatitis. Kidney stones and any irritation of the kidney in itself may cause low back pain.

3. *Gynecological disorders*—A pelvic inflammatory disease is often characterized by low back pain. Tumors of the ovaries or uterus have long been known to be the cause of frequent low back pain. Retroversion and retroflexion of the uterus fall into this category as well.

4. *Affections of the central nervous system*—Tumors of the spinal cord and any disease of the central nervous system may cause low back disorders. Tabes, meningitis, syringomyelia, and lateral sclerosis not infrequently manifest themselves with low back pain.

5. *Sciatic neuritis*—This may be due to deficiency diseases, diabetes or trauma.

6. *Herpes zoster*—Many a doctor has been chagrined to have herpes zoster blebs develop in the back after he has treated the patient for many days for some other cause.

7. *Lesions of the retroperitoneal structures*—Suffice it to say that any infection or tumor in the retroperitoneal area may cause low back pain.

8. *Vascular conditions*—Buerger's disease affecting the lower portion of the aorta or the iliac vessels may cause low back pain. Arteriosclerosis can do likewise. Thrombosis of the iliac vessels or in the smaller vessels coming off from the aorta in the lower back may produce low back pain.

9. *Generalized infectious diseases*—Influenza not infrequently causes low back pain even before the condition itself is diagnosed. Septicemia can do likewise.

**IV. Psychosomatic Disorders**

These conditions are best diagnosed by a psychiatrist but the orthopedist must include some of the more commonly known psychosomatic disorders in his differential diagnosis particularly when the complaint of low back pain has gone on for an indefinite period of time and he has been unable to make any specific diagnosis. The conditions which should be included in his differential diagnosis are hysteria, functional overlay, malingering and actual psychosis.

**Diagnosis**

The principal points to be considered in diagnosis are as follows:

1. *Pain*—Pain is usually the presenting symptom and is located somewhere in the low back most commonly over the lumbosacral joint area. The pain may be local or radiating and when it radiates it may go down one or both legs and it may go around to the abdomen. Any pain which is increased by motion is generally decreased by rest.

2. *Tenderness*—The patient will generally complain of pain on pressure over a given region depending on where the injury or disease is present. He will have tenderness over the lumbosacral joint very commonly if there is a lesion affecting this particular joint. If the patient has an injured interspinous ligament, the tenderness will be at the point where the ligament has been stretched or torn. He may have tenderness along the course of the sciatic nerve or over the sacrosciatic notch in cases of sciatica.

3. *Muscle spasm*—Muscle spasm is present in varying degrees in practically all affections of the lower back depending upon the severity of the lesion. The spasm may be such that the patient will either flatten or reverse the normal lordotic curve.

4. *Limitation of motion*—Patients with low back affections generally will have a limitation of motion of the spine. This limitation is largely in a forward plane. However, lateral flexion, rotation and extension of the spine may also be reduced. In disc lesions, the patient may have marked limitation of straight leg raising on the affected side.

5. *Posture*—The patient usually tends to list away from the side of the lesion. This is particularly true in disc lesions when the patient will develop a list away from the side of the lesion. The list may be either lateral or forward or may be a combination of both.

6. *Special tests of passive mobility*—Many tests of passive mobility have been devised by various orthopedic surgeons—none of which is real specific in making any definite clinical diagnosis. These include the so-called flexion of the thighs and hips test upon the abdomen, straight leg raising tests,

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## GYNECOLOGICAL CAUSES OF BACKACHE\*

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**B**ACKACHE is one of the most common complaints that a gynecologist is called upon to evaluate. Several years ago derangements of the internal pelvic organs were always suspect with this presenting symptom, and as a result uterine suspension became the most popular gynecological operation of the day, though seldom was it indicated.

As is true in medicine so frequently, this operation soon fell into disrepute, and only recently has it regained some normal clinical focus.

Practically every patient with backache, when you see and examine her thoroughly, will be found to have some basic and underlying orthopedic cause for the back pain.

Doctor Ball has mentioned that from the point of view of a gynecologist, less than ten per cent of the backaches we see are caused by anything other than mechanical factors, and less than ten per cent of the mechanical backaches require anything other than routine, simple, orthopedic or postural exercises for improvement or cure.

I rather hesitate to mention posture in the presence of our orthopedic panelists, but I think it is important to have some knowledge of this, as it relates to gynecology and general medicine.

Steindler stresses that in normal posture, the deflections of the spine are usually compensated within the spine itself. In abnormal posture, the spinal deflections are compensated by the body, as a whole, perhaps with abnormal tilting of the pelvis, deviation of the knees and tilting of the hips, in one way or another. It is much like going in to be fitted for a suit. It is far easier to fit the suit to your figure than it is to fit your figure to the suit. Perhaps we have all had experiences of this kind at one time or another.

In pregnancy, we certainly find backache to be a common complaint, and here, Doctor Norman Miller has pointed out, there usually is some paralysis of the back extensors, and the line gravity is

moved posterior to the sacro-iliac joints. In compensation of this, there is an increase in the lumbar curve, and an accentuation of the dorsal curve. These are natural and necessary compensations in the pregnant woman to allow for the softening and relaxation of the pelvic articulations which are the lumbo-sacral joints, the sacro-iliac joints, and the symphysis. These changes and softenings begin in the second trimester of pregnancy.

A great deal can be learned about a woman, if you see her with her girdle off. This is perhaps the most naive statement that this panel will make. Ball emphasizes that the abdominal viscera are maintained in the upper abdomen, like an inverted pear, held by the action of the abdominal muscles, the diaphragm, the pelvic floor and the lumbo-sacral spine. In the multiparae, there is frequently a loss of these supports and the viscera drop into the pelvis and are suspended by their mesenteries and this leads to congestion and alterations in the lymphatic and venous drainage of the pelvis. We know that the venous drainage of the pelvis is accomplished through a series of complex sinuses and as a result of this visceral change, which is subsequently followed by a postural change, we have the well-recognized gynecological complex of diffuse pelvic congestion.

I believe there really are a few gynecological problems which can be responsible for backache, but the pelvic pathology precedes and usually contributes to some alteration in spinal dynamics.

The examination of the gynecological patient, with backache, practically never results in the finding of a point of tenderness over areas of the spine, as indicated by Doctor Savastano. This is more indicative of an orthopedic problem. Twenty per cent of women are born with a retrodisplaced uterus, which does not predispose to infertility, nor backache, nor does it require, as far as we can tell, any particular treatment and the diagnosis of this condition should be quite simple.

The fixed retrodisplacement on the other hand, is suspect in backache, and the diagnosis should be quite easy because the symptoms are increased with attempts to elevate this fixed uterus. As a matter of fact, a pessary will make the patient worse, because the posterior bar will press against the

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indurated and extremely tender uterosacral ligaments. If the symptoms are bad enough, surgery is the only effective treatment and the type of surgery to be performed can only be determined at laparotomy. We rather frequently see patients with backache and a retrodisplaced uterus which is movable. In these patients, the uterus should be brought forward to an anterior position and maintained there with a pessary. Surgery should be done only if the patient's symptoms improve with a pessary.

As far as infections are concerned, pelvic inflammatory disease is well recognized as being present in a patient with diffuse, abnormal discomfort and backache, usually made worse by walking and frequently by working. Twenty-five per cent of these particular patients also have menstrual dysfunction, seventy-five per cent of which are anovulators, with dysplasia of one type or another and their symptoms vary with the amount of involvement. Acute cases should be conservatively treated with antibiotics, bed rest and sedatives.

In the chronic or recurrent cases, surgery is all we have to offer, and, unfortunately, this must be quite radical in many of these patients.

As to other conditions, one should mention endometriosis, which frequently involves the uterosacral ligaments, and tuberculosis.

Currently, there are fairly good medical methods for handling these cases with the progestins and the anti-tuberculosis drugs, such as INH and Streptomycin.

Generally speaking, however, they don't work for long and surgery again must be reverted to as long as examination reveals some abnormality within the pelvis which could explain the patient's symptoms.

Pelvic tumors when fixed, space occupying or invasive, can cause backache, and the type of surgery performed, again should depend upon the findings at laparotomy.

We have mentioned previously the static factors, and I need not repeat those.

I want to emphasize once more that less than ten per cent of the patients we see with backache have other than a mechanical cause for that backache, and less than ten per cent of the mechanical backaches require more than postural exercise for treatment or cure.

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Goldthwait's sign, Faber's sign, Gaenslen test, compression tests and many others.

7. *X-ray examination*—X rays should be taken of all cases in which there is a complaint of low back pain. When indicated, other parts of the bony skeleton should be X rayed to bring about a definite

diagnosis. The X ray may reveal such things as arthritis, malignant or benign tumors of the bony skeleton, osteoporosis and many other conditions.

An orthopedic-neurological examination is indicated in all cases.

8. *Laboratory tests as indicated*—Such tests as mentioned previously should be made and these in most cases include alkaline phosphatase, acid phosphatase, complete blood count, urinalysis, serology, prostatic smear, sedimentation rate, albumin globulin ratio as well as bone smears or even bone biopsies.

#### Treatment

Treatment may be classified into general and specific as well as conservative and operative.

*Conservative treatment*—The important requisites in conservative treatment consist of bedrest, support of the affected part and an attempt to relieve pain and muscle spasm by medication.

Treatment in the acute stage would be as follows:

1. Bedrest on fracture board or orthopedic mattress.
2. Postural flexion of hips and knees.
3. Back support — taping, canvas support or scultetus binder.
4. Traction—mild or prolonged, heavy for short durations.
5. Heat—hot, moist packs in the acute stage are preferable and seem to be more efficacious than warm, dry heat.
6. Medication—codeine and aspirin or demerol are used as the case may dictate. Muscle relaxants are also definitely indicated in the acute stage and may be given either intravenously or by mouth or both. Soma, Robaxin, Salimeph-C, Trancopal, Tolserol, Tolseram are some of the muscle relaxants now in use.
7. Massage—local gentle massage is often soothing to the patient.

Treatment in the subacute stage would be as follows: Patient may now be put on gentle exercises but on resuming his ambulatory status his back should be supported with strapping, low back canvas support or even a brace. A plaster cast is sometimes used. Graded exercises can now be instituted. Manipulative exercises at one time was the custom—with the idea of breaking up painful adhesions if the patient failed to improve under conservative treatment. This form of treatment has been largely discarded as it did not prove to be successful in the hands of many orthopedists. Those who use the manipulative therapy would say that they would occasionally feel a distinct clicking sound as adhesions were broken; however, certain complications have come about as a result of manipulation with the result that most of the ortho-

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## UROLOGICAL CAUSES OF BACK PAIN\*

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ALTHOUGH BACK PAIN is usually thought of as being caused by diseases of the spine or spinal muscles, there is no doubt that many pathological conditions of the genitourinary tract give rise to back pain of one form or another. Disorders of any of the organs of this system are capable of causing this symptom, and representative examples will now be described.

Adrenal diseases, consisting of benign or malignant neoplasms, may and often do cause back pain on the affected side. Such neoplasms include cortical adenomas and carcinomas, but usually not the tumors of medullary origin. By contrast neuroblastomas in children do not usually give rise to back pain. Relating adrenal disease to backache may be difficult, though some lesions are associated with hormonal changes and are thus recognized. Pyelograms may show changes in the position of one of the kidneys, suggesting a suprarenal mass, and these can often be better defined by means of perirenal gas insufflation to delineate the mass. (Oftentimes the bony decalcification associated with Cushing's syndrome is responsible for severe backache.)

The kidney, of course, is well known to be the cause of backache in a variety of conditions. Among the congenital lesions one thinks immediately of aberrant renal vessels which quite clearly can cause backache due to the associated hydronephrosis. Oftentimes, this is further accentuated by a degree of nephropathy.

Congenital polycystic kidneys, on the other hand, despite rather marked enlargement of the renal mass, often cause no pain unless there is a sudden hemorrhage into one of the cysts.

Inflammatory disease of the kidney due to pyogenic organisms is almost always associated with backache, as well as accompanying chills and fever, frequency and dysuria. The diagnosis is usually not difficult to make clinically, particularly after examination of the urine. By contrast tuberculous

renal infection usually does not cause pain in the back unless obstruction develops as the result of a tuberculous stricture of the ureter.

One of the commonest causes of backache of renal origin is a renal calculus. Those in the pelvis of the kidney—if they are small enough to move around or enter the upper ureter—are most apt to cause pain. Pain is felt in the costovertebral angle on one side and tends to be felt in the flank area and groin as well. Less apt to cause pain because they cannot move are small calyceal calculi or large staghorn calculi, both of which, however, may give rise to a backache if the patient is extremely active.

Neoplastic disease of the kidney in adults is classically known to cause back pain, hematuria, and often a low-grade fever. This is not so in the case of solitary renal cysts, which in adults are usually asymptomatic. Malignant Wilms's tumor in children is also not associated with pain and is usually accidentally discovered by finding a flank mass in an otherwise normal child.

The diagnosis of most renal lesions will of course be suggested when there is an abnormality in the urine as well as by the findings on a plain film of the abdomen. Intravenous or retrograde pyelograms are usually necessary to establish a positive diagnosis.

Back pain of ureteral origin is almost always due to the passage of a ureteral calculus. The pain in these cases is characteristically severe; it radiates from the costovertebral angle to the groin, causes the patient to be restless, and often is associated with vomiting. The diagnosis is of course suggested by the type of pain, and the urine is found to contain red blood cells. X rays of the abdomen and intravenous or retrograde pyelography will be necessary to verify the diagnosis.

The bladder, although usually not thought of as a possible cause of back pain, can do so in a variety of circumstances. Cystitis, particularly acute cystitis in women, is often associated with low back pain. Bladder obstruction due to benign prostatic hypertrophy or bladder neck contracture, can cause pain in the upper back due to the development of hydro-ureters or hydronephrosis. And, finally, carcinoma of the bladder has a predilection for metastasizing to bone and in this way may be responsible for pain in the back.

\*Presented at the 149th Annual Meeting of the Rhode Island Medical Society, at Providence, Rhode Island, May 11, 1960.

Prostatic conditions similarly are sometimes responsible for back pain. Prostatitis in many individuals is associated with low back pain, along with dysuria and perineal discomfort. The diagnosis here is usually made on the basis of an examination of the prostatic fluid, which contains an abnormally large number of white blood cells. In addition, of course, there is prostatic tenderness when the gland is palpated. The diagnosis of carcinoma of the prostate, made on rectal palpation because of its characteristically hard nodularity, may also explain any existing back pain, since bony metastases to the spine and para-aortic lymph nodes are the rule in advanced cases of this disease. The unmistakable X-ray appearance of these lesions along with an elevated blood acid phosphatase serve to substantiate this diagnosis.

Finally, diseases of the testes may be associated with varying degrees of back pain. Orchitis due to mumps, or epididymitis due to pyogenic infections, may cause back pain on the affected side. The diagnosis is usually suggested by the abnormal findings on examination of the testis itself. Neoplasms of the testis, on the other hand, are usually symptomless until metastases occur; here again back pain may be prominent because of their predilection to spread to the para-aortic lymph nodes, as well as to bone.

These brief comments will serve to illustrate that back pain or ache may be caused by disease of any part of the urinary tract and that such cause is often suggested by the findings on physical examination together with abnormalities of the urine. Examination by appropriate X rays is often necessary to confirm these diagnoses.

#### DID YOU KNOW?

- That a city dweller is somewhat more likely to have an accident than a farmer, but urban or rural, home is still the place where most accidents take place.
- That more than 600,000 persons are bitten by dogs in this country each year, at a medical cost of \$5 million.
- That nearly 22 million Americans, or 13 per cent of the population, have no teeth; and about two-thirds of persons 75 or older no longer have any teeth.
- That voluntary hospitals should have one new hospital bed every 36 hours at a cost of \$20,000 a bed just to keep up with population growth.
- That the philanthropic public gave over \$1 billion last year to promote the nation's health.

**Monday, November 14. Meeting of Council,  
Rhode Island Medical Society, Hope Club,  
Providence (6:00 P.M.).**

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pedists no longer use this type of therapy. Those who used this type of treatment felt that they would break up contractures, fibrosis and adhesions. Some went so far as to feel that they were reducing dislocated discs and reduced dislocated facets.

*Operative treatment*—The operative treatment has included local injections, removal of abnormal bone formations, myotomy, fasciotomy, simple excision of herniated discs, and spine fusions.

Local injections consist of doing perineural sciatic injections with varying strengths of novocain or injecting trigger points of tenderness. At one time, sectioning of the piriformis muscle and the tensor fascia femoris was used in order to relieve tension or pressure on the sciatic nerve. Operative stabilization of the spine is the more commonly used operation for the low back at the present time. Removal of the ruptured disc *per se* is done by many orthopedists but a good many others fuse the spine in addition to removing the ruptured disc. The so-called trisacral fusion which consisted of fusion of the lumbosacral joint and both sacro-iliac joints is seldom if ever done at the present time. Lumbosacral fusion is the fusion which is most commonly done at the present time. There has also been a general tendency to fuse one joint rather than two or more joints. It is felt that one joint gives a higher degree of success in stabilizations than when more than one joint is fused.

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## WESTERN EQUINE ENCEPHALOMYELITIS IN RHODE ISLAND

ALTON M. PAULL, M.D., AND RAYMOND YOUNG, PH.D.

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**H**UMAN INFECTION with the virus of equine encephalomyelitis is very uncommon in New England. In the United States, the eastern variety has occurred in epidemic form in Massachusetts only, except for one outbreak in Louisiana and Texas in 1947.<sup>1</sup> In 1958, the virus of western equine encephalomyelitis (WEE) was isolated from a partridge in Rhode Island.<sup>2</sup> As far as I have been able to determine, this is the only instance where this virus has been definitely found to be present in New England. It might be noted that in the same year that the WEE virus was isolated in this state one definite and one probable isolation of this virus in English sparrows was reported from the state of New Jersey.<sup>3</sup>

The presence of eastern equine encephalomyelitis (EEE) in Rhode Island has been confined to horses and birds (cf. Table 1). Maine has not reported equine encephalitis in either humans or animals, but, in the late 1930's a horse was suspected of harboring the virus of EEE.<sup>4</sup> In 1928, an epidemic of EEE in horses occurred in Connecticut.<sup>5</sup> Since then, numerous cases of the eastern variety have been found in both pheasants and horses predominantly in the eastern part of that state. There have been a number of cases of human EEE suspected in Connecticut, but none has had laboratory confirmation. Records fail to show the presence of EEE in New Hampshire<sup>6</sup> or Vermont.<sup>7</sup> In 1938, Feemster reported an epidemic of human EEE in Massachusetts.<sup>8</sup> In 1955 and 1956, two smaller epidemics of EEE were also reported by Feemster.<sup>9</sup> In all, a total of fifty cases of EEE have been found in Massachusetts with a fatality rate of 68%. Survivors under ten years of age suffered much more serious sequelae than those who were older.

The following case is reported because it is believed to represent the first human infection with the virus of WEE to be reported in New England.

H. W., age sixteen, was admitted to the Memorial Hospital in Pawtucket, Rhode Island, on August 31, 1956, because of fever and delerium. He had been perfectly well until two days prior to admission at which time he developed anorexia, nausea and mild vomiting. The day prior to admission, he complained of fever, severe headache and chilly sensations. Several hours prior to admission, he became confused and developed visual and auditory hallucinations. Physical examination revealed a well-developed, acutely ill patient with a flushed face. His temperature was 102°F., the pulse was 100, and the respiration 18. The blood pressure was 115/78. There was a slight puffiness to the periorbital region. The skin was warm and moist. Otherwise, the entire physical and neurological examination was within normal limits. Examination of the blood disclosed the hemoglobin to be 12.5 gms%; the white cell count was 4700 with 68% neutrophils, 30% lymphocytes and 2% monocytes. Several days later, the WBC was repeated and had risen to 6900. Urinalysis was normal and the Hinton negative. Three blood cultures were sterile. Three stool examinations were negative for ova and parasites. Serum electrolytes, total proteins and AG ratio were normal. Agglutination reactions for typhoid, paratyphoid, proteus, and brucellosis were negative. The blood of this patient

*continued on next page*

TABLE 1  
Incidence of Equine Encephalitis in Rhode Island

1953	one case in a horse one flock of pheasants
1955	15 confirmed horse cases 6 pheasant farms 3 wild pheasants
1956	8 cases in horses 1 pheasant farm 1 quail, sparrow, and pheasant from a second farm
1958	1 pheasant

This material supplied by Raymond F. McAtee, M.D., medical director, Department of Health, Division of Communicable Disease, Providence, Rhode Island.

was examined for CNS virus antibodies by means of the complement-fixation test. Commercial virus antigen preparations were used in the tests. Controls for anticomplementary action of antigens and serums were satisfactory, and positive and negative serum controls also were satisfactory. Serum titers were determined on paired specimens of blood, the second of which was collected after an interval of seven days. The results are indicated in Table 2.

Shortly after admission, a lumbar puncture was performed. The spinal fluid was under normal pressure. The fluid was crystal clear. Examination of the spinal fluid disclosed a cell count of four erythrocytes and forty lymphocytes. The spinal fluid protein was 23 mg%. A culture of the spinal fluid was sterile. X rays of the skull and chest were within normal limits. My initial impression was that the patient had a viral infection involving the central nervous system. However, he was started on Tetracycline and this was continued for six days. For four days, the patient ran a spiking temperature rising to a high of 103°F.; but on the fifth day, the temperature returned to normal and remained that way for the duration of his hospital stay. Initially, he was restless and at times combative. The auditory and visual hallucinations became more prominent. On the third hospital day, the patient was seen by a consultant in neurology who concurred with the diagnosis of encephalitis. The patient was treated symptomatically with sparine, frenquel, and salicylates and showed progressive improvement and on the fourteenth day, he was discharged. Follow-up studies six months later failed to reveal any sequels. At the age of eighteen, he enlisted in the army and was accepted.

The term encephalitis refers to an inflammation

of the brain. The illness is called "equine" because it was first isolated from horses in 1933 and has been known to cause severe epidemics in horses for a number of years. Eastern refers to the fact that this strain of virus has been found in the eastern part of the country, while the western strain has been confined to the western part of the country.

Typically, a viral encephalitis has a more or less acute onset with fever and mental symptoms varying from irritability to stupor coma, delerium and convulsions. Mild cases may resemble nonparalytic poliomyelitis. If the cerebellum is involved, ataxia may be prominent. Involvement of the midbrain leads to pupillary and ocular disturbances. In addition, cranial nerve palsies may occur. With involvement of the meninges and spinal cord, headaches, vomiting, stiff neck and paralysis may be found.

The cerebral spinal fluid may be entirely normal or there may be a pleocytosis with increased protein. Initially, the pleocytosis may be polymorphonuclear; but later, it usually is lymphocytic.

The disease is spread to susceptible animals through the bite of a mosquito. In western and central United States and in Canada, *Culex tarsalis* is believed to be the principal vector. *Culex melenura*, *Aedes vexans* and *Culex salinorus* are strongly suspected as the vectors in the eastern United States. The incubation period is usually five to fifteen days. Wild and domestic birds are the principal reservoirs of infection in the United States. Although serving as hosts, horses and man are not important as reservoirs of infection. Infants and those of the older age group are most susceptible to infection. Infection to any degree results in homologous immunity.

The most reliable method of confirming the diag-

Virus Antigen	Serum #1 9/4/56				Serum #2 9/11/60									
	1/5	10	20	40	1/5	10	20	40	80	160	320	640	1280	2560
eastern equine encephalomyelitis	3+	0	0	0	4+	3+	0	0	0	0	0	0	0	0
western equine encephalomyelitis	4+	4+	2+	0	4+	4+	4+	4+	4+	4+	4+	2+	0	
lymphocytic choriomeningitis	0				0									
measles	0				0									
St. Louis encephalitis	0				0									

The paired serums showed a marked rise in western equine encephalomyelitis antibody titer of from 1/10 to 1/640 with 4+ reactions in each case. This no doubt indicated infection with the virus of western equine encephalomyelitis, which was related to the patient's symptoms. The rise in specific antibody titer between acute phase and convalescent phase serums confirms the clinical diagnosis of the case.

nosis is by isolation of the virus. The virus can most frequently be obtained from brain gray matter of patients who have died within the first five days after the onset, and when autopsy is performed within two to three hours after death. Other tissues, blood or cerebrospinal fluid rarely give positive results.

Although somewhat less reliable than the actual isolation of the virus, the demonstration of a rising titer of complement-fixation or neutralizing antibodies is very suggestive of the disease.<sup>10</sup> The neutralizing antibodies reach high titers in one week and stay at these levels for about two years after the initial infection. Complement-fixation antibodies begin to appear at the end of the first week. The titer rises slowly and begins to subside again after six to eight weeks.

Clinically, it is impossible to distinguish EEE from WEE. However, EEE is far more virulent than the western variety with a mortality of 65% as against 15%; the sequela in those who survive are also more severe. Although the virus of WEE is largely limited to the western part of the country, it has been isolated in Texas, Alabama and more recently in New Jersey and Rhode Island.

In January 1957, complement-fixation tests were done on the sera of 243 people in South Dakota.<sup>11</sup> These people came from three different counties in South Dakota. From this study three interesting facts were found:

1. About 34% of the sera were positive to either EEE or WEE.
2. About 20% of the positive sera reacted with EEE.
3. About 3% of the sera were positive to both EEE and WEE.

No definite conclusion could be drawn from this series, but it seems clear that EEE does occur in the west; and therefore, there is no reason why WEE cannot occur in the east. The diagnosis of WEE on our patient seems confirmed by a fairly typical clinical picture plus a positive complement-fixation test.

#### SUMMARY

1. The incidence of equine encephalitis in Rhode Island as well as the other New England States is commented upon.
2. The clinical features and methods of diagnosis are briefly discussed.
3. A patient is reported who is thought to represent the first case of western equine encephalitis diagnosed in this state and probably in New England.

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## LOCAL INJECTION THERAPY OF RHEUMATIC DISEASES WITH A NEW SYNTHETIC CORTICOID (Kenalog\*) SUSPENSION

STANLEY D. SIMON, M.D. AND CAROLL M. SILVER, M.D.

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CORTICOSTEROID INJECTION for local treatment of rheumatic joint and soft tissue diseases is well established by a large and generally favorable clinical experience as an expedient therapeutic measure. There is an obvious usefulness where systemic corticosteroids are contraindicated or poorly tolerated or to augment the benefits while minimizing the hazards inherent in systemic therapy. There is also the finding that in the major categories of arthritis, periarthritis, myofibrositis, bursitis, tenosynovitis and fasciitis, local results of injection procedures are comparable or superior to those obtained with oral medication.<sup>1</sup>

The merit of the instillation of a corticosteroid into prominently involved single or multiple joints, bursae or accessory soft tissue structures lies in the delivery of a high level of anti-inflammatory activity directly to the diseased area. When a response is elicited, the subsidence of stiffness, swelling and pain leading to an increased range of motion is impressive.<sup>2-7</sup> A review of published studies indicates that with administration of injectible corticosteroids in the early stages of disease, improvement may be anticipated in 50 to 80 per cent of the cases treated.<sup>1</sup> A higher percentage of favorable response occurs in diseases of the knee, epicondylitis and acute bursitis than in diseases of the hip, fibrositis or chronic bursitis. Benefits in osteoarthritis are greater in degree and longer in duration than in rheumatoid arthritis. Comparative figures obtained over a period of five years show that complete relief was accomplished in 60 per cent of knees affected with osteoarthritis while 30 per cent of knee joints affected with rheumatoid arthritis no longer required local corticosteroid injection. Continuing

benefits from periodic intra-articular injection of knee joints were manifested in an additional 15 per cent of cases of osteoarthritis and 50 per cent of rheumatoid arthritis.<sup>1</sup>

The single most important feature of any corticosteroid to be instilled into joints or into enveloping or accessory structures is the anti-inflammatory potency per milligram of material. Anatomic considerations impose intrinsically rigid restrictions on the therapeutic activity which can be provided by local injection. A corticosteroid preparation which supplies a high level of anti-inflammatory activity in relatively small volume and in low dosage and which possesses the additional characteristic of prolonged activity is surely the drug of choice for local injection therapy.

All of the major corticosteroids have been prepared for local instillation. The broadest experience, providing a substantial fund of clinical data, concerns the use of hydrocortisone either as the acetate or as the tertiary-butyl-acetate. Although these compounds have achieved an unofficial status as reference materials in the appraisal of more recently synthesized anti-inflammatory steroids, there is considerable disagreement as to the concentration and dosage which can be absorbed with maximum benefit. Hydrocortisone acetate has been employed for treatment of osteoarthritis and rheumatoid arthritis of the knees in concentrations as high as 150, 250 and 300 milligrams per cubic centimeter.<sup>2</sup> Marked relief was reported which persisted three to four times longer than that induced with lesser concentrations. Some of these patients, however, experienced systemic effects with improvement extending to joints other than those injected. Still others obtained no greater benefit than that derived from injection of 100 milligrams into the knee joint. Doses of 50 to 100 milligrams<sup>8</sup> or ranging from 25 to 75 milligrams<sup>1</sup> have been separately found satisfactory for local injection in rheumatic disorders. From a practical standpoint, doses of 150 to 300 milligrams are considered excessive and not necessarily more effective than moderate doses.<sup>1</sup> A beneficial response to hydrocortisone must be accomplished within the boundaries of the more conventional and conservative dose range.

\*Kenalog® Suspension, containing 10 mg. triamcinolone acetonide in each cubic centimeter, was supplied for this study by Doctor R. C. Merrill, The Squibb Institute for Medical Research, New Brunswick, New Jersey.

When compared with hydrocortisone, the steroid analogue, triamcinolone acetonide, appears from clinical trial in almost 300 patients with rheumatic involvement of joint and muscle to elicit an equivalent or somewhat greater response in appreciably lower dosage.<sup>8-10</sup> Good to excellent amelioration of symptoms was reported in 85.4 per cent of cases treated with 4 to 20 milligrams,<sup>8</sup> in 98.5 per cent of cases treated with 2.5 to 10 milligram doses,<sup>9</sup> and in 74.3 per cent of cases where doses of 5 to 50 milligrams were injected.<sup>10</sup> At these levels, systemic corticosteroid effects were absent and, for all the anti-inflammatory potency exhibited by the compound, serious untoward reactions were not encountered. Where repeat injections were required, these were administered at a frequency of from twice weekly to twice monthly<sup>9</sup> or at intervals of once weekly to once every two months.<sup>10</sup> In the present investigation, the therapeutic efficacy of triamcinolone acetonide (Kenalog\*) in minimum dosage of 2 to 10 milligrams was subject to further clinical examination. The preparation employed for local instillation is a suspension containing 10 milligrams of active agent per milliliter. The suspension was used for local injection therapy of commonly manifested rheumatic disorders in a series of patients seen in private practice.

#### *Materials and Method*

A group of 100 consecutive patients presenting symptoms of inflammatory involvement of joints, bursae or tendon sheaths received single injections of triamcinolone acetonide for prompt suppression of the locally active situation. Volumes of 0.2 to 1.0 milliliter of the suspension delivering 2 to 10 milligrams of the corticosteroid were instilled directly into joint spaces or introduced into extra-articular or other implicated areas. Diagnoses and distribution of patients are given in Table I. The clinical material is adequately representative of those conditions considered amenable to local injection therapy. Bursitis, "tennis elbow," synovitis, tenosynovitis, tendonitis, epicondylitis, arthritis, coccygodynia, plantar fasciitis, and sprain constitute the prevalent joint and soft tissue disorders encountered and treated during this study.

The technics for local injection of affected sites have been fairly well detailed.<sup>1,9</sup> Intra-articular instillation is accomplished by means of relatively simple and standard procedure allowing for variations in the anatomic approach specific to the joint under treatment. Aseptic precautions must be observed. A familiarity with structural features of the joint is desirable. The needle, 20-gauge or smaller in size, is inserted through skin and subcutaneous tissue and carefully guided into the joint space so that trauma to joint surfaces is avoided.

\*Kenalog® is a Squibb trade-mark.

A diagram or X ray may facilitate proper placement or cautious passive movement of the joint may indicate the opening. Once the joint capsule is entered there is less resistance to the advance of the needle. Where resistance to the needle is firm, it should be withdrawn slightly and advanced at a new angle. The needle is properly in place when a small quantity of air can be injected freely without resistance to pressure on the plunger or actual rebound. Aspiration permits a final check on needle penetration, establishing the successful circumvention of blood vessels.

A routine injection technic has been suggested for extraarticular use, particularly in bursitis.<sup>1</sup> Initially, a small intradermal wheal is formed with 1 per cent procaine at the selected site of injection. Depending on the depth of penetration necessary, procaine is infiltrated slowly through a 20- or 21-gauge needle, 1.5 or 2 inches long, in a straight line directed at the chosen bursal area. If the presence of calcium deposits in or near the bursa has been demonstrated by X ray, an occasional suction pull on the plunger is indicated for the purpose of aspirating calcium. The recovery of calcium is evidence that an accurate injection is in progress. With the needle in place, repeated flushing and aspiration is carried out with about 2 milliliters of 0.5 per cent procaine solution. Most of this is recovered and the milky aspirated fluid is discarded. The procedure is repeated until the procaine solution is returned reasonably clear. At this point, with the needle still in place, the corticosteroid is injected.

#### *Results of Treatment*

In this experience, triamcinolone acetonide produced a high proportion of benefits when administered locally in remarkably low dosage. The degree of improvement given in Table I was evaluated in accordance with reduction in swelling, stiffness and pain and increase in mobility as well as subjective expressions of relief from acute and distressing symptomatology. On this basis, therapeutic response was found excellent in 85 (85%) cases, good in 9 (9%) cases, and fair in 1 (1%) case. Five patients (5%) showed no improvement with treatment. Palliative effects were achieved with as little as 2 milligrams of corticosteroid representing an injection volume of 0.2 milliliter. The small injection volume was of appreciable advantage in the intraarticular instillation of small joints such as finger joints and in the treatment of de Quervain's disease and other forms of tenosynovitis. There appeared to be no doubt that benefits could be obtained with considerably lesser quantities of triamcinolone acetonide than recommended for hydrocortisone preparations. Although the usual range of peripheral joints accessible for local injection were treated, the dosage adminis-

continued on next page

tered never exceeded 10 milligrams.

As may be seen from the table, five patients failed to show an adequate clinical response and surgery was subsequently performed. These included 1 case of bursitis of the shoulder with calcification, one case of "tennis elbow," one injury to a temporomandibular meniscus with synovitis of the jaw joint, one case of de Quervain's disease and one case of coccygodynia. At the time of surgery, there was no evidence of the injected material remaining as a mass in the tissues. In previous experience with hydrocortisone, residue material was encountered at operation following the failure of local injection therapy. A foreign body residue was a frequent occurrence at the site of previous injection, and in particular, deposition of material was observed within the supraspinatus tendon and the extensor tendons at the elbow. The material

apparently was not absorbed and acted instead as a foreign body. This undesirable consequence of extra-articular injection was not encountered with triamcinolone acetonide in the five cases where surgical intervention proved necessary.

There were no untoward reactions to triamcinolone acetonide in this series and no systemic corticosteroid effects were observed as a result of local injection. Where the drug was given by extraarticular injection, patients were warned of the possibility of pain persisting as long as thirty-six hours. Pain, varying from mild discomfort to acute distress, is an anticipated outcome of the pressure exerted by local accumulation of injected material in an area of inflammation. The judicious administration of analgesics and the suggestion that an ice bag be placed to the affected area proved sufficient for amelioration of the immediate dis-

**TABLE I**  
**Treatment of Rheumatic Diseases**  
**By Local Injection of Triamcinolone Acetonide (Kenalog®)**

tress. There were no occurrences of infection in 100 cases and no other complications were encountered.

#### *Comment*

Local injection of corticosteroids is an approved therapeutic procedure in several situations experienced in the treatment of the commonly manifested rheumatic disorders. It is preferred therapy where systemic corticosteroids are contraindicated. More frequently, however, steroid injection is an important adjunctive measure. Locally active or more resistant joints and accessory soft tissue structures may be selectively treated with immediate benefit until a more gradual improvement is achieved with systemic medication. Local suppression of an acute process may help maintain the improvement induced by systemic treatment or permit maintenance with lower systemic dosage and presumably with less hazard of unwanted reactions. In addition, local injection therapy may contribute successfully to the limitation of deformity, promote an earlier and more satisfactory use of physical therapy and prove a valuable pre- or post-operative measure in orthopedic surgery. Delivery of a high level of anti-inflammatory activity directly to the implicated structure frequently induces a dramatic remission of pain, swelling and stiffness, usually within forty-eight hours.

The local introduction of a therapeutic level of anti-inflammatory activity is qualified by anatomic considerations of joint capacity and area of internal synovial surface available for absorption of the corticosteroid. Accordingly, the compound furnishing the greatest potency in lowest dosage suspended in the smallest volume of vehicle is best suited to injection therapy. It is our impression that triamcinolone acetonide is superior to hydrocortisone for this purpose. In our experience, doses of 2 to 10 milligrams representing an injection volume of 0.2 to 1.0 milliliter elicited a beneficial response in an impressively high proportion of patients treated. Moderate therapeutic dosage for hydrocortisone is placed at the relatively high level of 25 to 75 milligrams.<sup>1</sup> It is also noteworthy that with triamcinolone acetonide, given in doses of 2 to 10 milligrams, there was no evidence of injected material remaining as a foreign body residue in soft tissues in five cases which came to surgery. In previous experience with hydrocortisone, residues of unabsorbed material acting as a foreign body were frequently found to be present in extraarticular tissue when operation proved necessary following clinical failure of local therapy.

#### **SUMMARY**

1. Triamcinolone acetonide (Kenalog®) in doses of 2 to 10 milligrams was administered by local injection in 100 consecutive cases of inflammatory

involvement of joints, bursae or accessory soft tissue structures. Improvement with treatment was evaluated in terms of reduction or elimination of swelling, stiffness and pain leading to increased mobility.

2. Benefits were observed in a high proportion of patients treated. Response was excellent in 85 (85%), good in 9 (9%), and fair in 1 (1%) of the cases. Five patients (5%) showed no improvement and subsequently came to surgery.

3. At surgery, there was no evidence of a foreign body residue at the site of previous injection. In earlier experience with hydrocortisone, residues of unabsorbed material remaining as a mass in soft tissues were frequently encountered when surgical intervention proved necessary.

4. There were no untoward reactions to triamcinolone acetonide in this series and no systemic corticosteroid effects were observed as a result of local injection. Varying degrees of pain experienced shortly after treatment yielded to the judicious use of analgesics and to the application of icebags to the affected area.

5. Triamcinolone acetonide is a highly potent anti-inflammatory agent well suited to local injection therapy in the commonly manifested rheumatoid disorders. Worthwhile benefits are achieved with appreciably lower dosage and correspondingly less injection volume than required with hydrocortisone. Enhanced potency is not accompanied by a greater propensity to produce unwanted reactions.

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## RHODE ISLAND DEPARTMENT OF HEALTH PROVISIONAL VITAL STATISTICS

**January-June, 1960**

**P**ROVISIONAL VITAL STATISTICS for the first six months of 1960 are available from vital records filed currently during this period. The data for 1959 are given also to obtain an indication of trends. This report gives the provisional numbers for events that occurred in Rhode Island regardless of the place of residence. The rates are computed on an annual basis using a provisional population enumeration of 846,207, which was obtained from the Boston Regional Census Office.

### *Births*

There were 9,140 live births recorded during the

first six months of 1960 representing a decrease of 2.5 per cent over last year's total for this period. The provisional birth rate of 21.6 per 1,000 population was 2.7 per cent below the rate (22.2) for the first six months of 1959.

### *Marriages*

The number of marriages recorded in the first half of 1960 (2,594) declined by 1.4 per cent when compared with this period of 1959 (2,630). The provisional marriage rate per 1,000 population was 6.1, a decrease of 1.6 per cent from the rate of 6.2 for this period of 1959.

**TABLE I**  
**Vital Statistics: Rhode Island, January-June, 1959 and 1960**

Item	Number		Per Cent Change	Rate		Per Cent Change
	1960	1959		1960	1959	
*Live Births .....	9,140	9,378	-2.5	21.6	22.2	-2.7
*Marriages .....	2,594	2,630	-1.4	6.1	6.2	-1.6
*Deaths .....	4,472	4,502	-0.7	10.6	10.6	0
†Infant Deaths .....	205	220	-6.8	22.4	23.5	-4.7
†Neonatal Deaths .....	153	169	-9.5	16.7	18.0	-7.2
‡Fetal Deaths .....	244	161	+51.6	26.7	17.2	+55.2

\*Rate per 1,000 population

†Rate per 1,000 live births

‡Includes fetal deaths of six months (26 weeks) or more in 1959, 20 weeks or more in 1960.

### *Deaths*

There were 4,472 deaths recorded during the first half of 1960, a slight decrease from the 4,502 deaths recorded during this period of 1959. The death rate was identical for both years—10.6 per 1,000 population.

### *Fetal Deaths*

The number of fetal deaths during the first half of 1960 is not comparable with 1959 because compulsory reporting of fetal deaths was lowered from 26 weeks to 20 weeks on April 1, 1959. During the first six months of 1960 there were 244 fetal deaths recorded, giving a rate of 26.7 per 1,000 live births.

### *Infant Deaths*

During the first half of this year 205 babies under one year of age lost their lives, compared with 220 in 1959. The 1960 infant mortality rate (22.4) was nearly 5 per cent lower than the rate of 23.5 obtained in 1959. The number and rate for neonatal deaths (under 28 days of age) decreased by greater proportions (Table I).

### *Principal Causes of Death*

The first four causes of death are the same in 1960 as in 1959. Influenza and pneumonia jumped from sixth place in 1959 to fifth in 1960. Diabetes mellitus rose from seventh rank in 1959 to sixth place in 1960, with the same rank as diseases of early infancy.

**TABLE II**  
**Deaths and Death Rates per 100,000 Population from Ten Principal  
 Causes of Death: Rhode Island, January-June, 1959-1960**

Causes of Death	1960		1959	
	Number	Rate	Number	Rate
1. Diseases of heart.....	2,040	482.2	2,039	481.9
2. Malignant neoplasms.....	795	187.9	790	186.7
3. Vascular lesions.....	392	92.6	451	106.6
4. Accidents.....	143	33.8	139	32.9
5. Influenza and pneumonia.....	130	30.7	106	25.1
6. Diabetes mellitus.....	122	28.8	87	20.6
7. Diseases of early infancy.....	122	28.8	138	32.6
8. General arteriosclerosis.....	65	15.4	59	13.9
9. Other diseases of circulatory system.....	57	13.5	62	14.7
10. Cirrhosis of liver.....	55	13.0	58	13.7

In Table III are shown the provisional numbers first six months of 1959 and 1960. of deaths from selected causes with rates for the

**TABLE III**  
**Provisional Numbers of Deaths from Selected Causes for the First  
 Six Months of 1959 and 1960: Rhode Island**  
**(Excludes fetal deaths. Rates per 100,000 population except as noted)**

Cause of Death (Seventh Revision of the International Lists, 1955)	1960		1959	
	Number	Rate	Number	Rate
All Causes#.....	4,472	10.6	4,502	10.6
Tuberculosis, all forms (001-019).....	26	6.1	32	7.6
Syphilis and its sequelae (020-029).....	.....	.....	7	1.7
Typhoid fever (040).....	.....	.....	.....	.....
Dysentery, all forms (045-048).....	2	0.5	2	0.5
Scarlet fever and streptococcal sore throat (050, 051).....	1	0.2	3	0.7
Diphtheria (055).....	1	0.2	.....	.....
Whooping cough (056).....	.....	.....	.....	.....
Meningococcal infections (057).....	.....	.....	.....	.....
Acute poliomyelitis (080).....	1	0.2	1	0.2
Encephalitis (082).....	2	0.5	1	0.2
Measles (085).....	.....	.....	.....	.....
Infectious hepatitis (092).....	4	0.9	4	0.9
Malignant neoplasms (140-205).....	795	187.9	790	186.7
Diabetes mellitus (260).....	122	28.8	87	20.6
Meningitis, except meningoococcal and tuberculous (340).....	5	1.2	4	0.9
Cardiovascular-renal dis. (330-334, 400-468, 592-594).....	2,633	622.3	2,674	632.0
Vascular lesions (330-334).....	392	92.6	451	106.6
Rheumatic fever (400-402).....	1	0.2	.....	.....
Diseases of heart (410-443).....	2,040	482.2	2,039	481.9
Hypertension without mention of heart (444-447).....	48	11.3	34	8.0
General arteriosclerosis (450).....	65	15.4	59	13.9
Other diseases of circulatory system (451-468).....	57	13.5	62	14.7
Chronic and unspecified nephritis (592-594).....	30	7.1	29	6.9
Influenza (480-483).....	8	1.9	2	0.5
Pneumonia (490-493).....	122	28.8	104	24.6
Bronchitis (500-502).....	19	4.5	17	4.0
Ulcer of stomach and duodenum (540, 541).....	41	9.7	35	8.3
Appendicitis (550-553).....	1	0.2	5	1.2
Hernia and intestinal obstruction (560, 561, 570).....	24	5.7	30	7.1
Gastritis, enteritis, etc. (543, 571, 572).....	8	1.9	14	3.3
Cirrhosis of liver (581).....	55	13.0	58	13.7
Acute nephritis and Nephrosis (590, 591).....	4	0.9	3	0.7
Hyperplasia of prostate (610).....	13	3.1	8	1.9
Complications of pregnancy, childbirth, etc.* (640-689).....	4	4.4	2	2.1
Congenital malformations (750-759).....	48	11.3	50	11.8
Certain diseases of early infancy (760-776).....	122	28.8	138	32.6
Symptoms, senility and ill-defined conditions (780-795).....	6	1.4	9	2.1
Accidents (800-962).....	143	33.8	139	32.9
Motor-vehicle accidents (810-835).....	28	6.6	39	9.2
All other accidents (800-802, 840-962).....	115	27.2	100	23.6
Suicide (963, 970-979).....	20	4.7	33	7.8
Homicide (964, 980-985).....	2	0.5	9	2.1

#Rate per 1,000 population

\*Rate per 10,000 live births



JOHN E. DONLEY, M.D.  
Editor-in-Chief, 1956 — 1960

# Editorials

## JOHN E. DONLEY, M.D.

**I**N RECORDING the passing of its distinguished Editor-in-Chief and in dedicating this issue to him the JOURNAL voices the sentiments of the profession and the community when it says, "a great and a beloved physician has passed to his rest." Doctor Donley was not only a gentleman and a scholar, but he was also a man who could view his patients with compassion and understanding that not only endeared him to them but greatly enhanced the help which he could give them. The JOURNAL is proud of his career as a neuropsychiatrist, and of his attainments as a student of the classics and also of the honors that have been awarded him. Honorary degrees, from universities, his selection as the only Chapin Orator from Rhode Island, his citation by President Eisenhower's Committee on National Employment of the Physically Handicapped for "outstanding services to the disabled," all these things and many more make it clear that his attainments were appreciated.

Although his outstanding qualities as a specialist in neuropsychiatry kept him extremely busy in private, hospital and consultation practice, nevertheless he always took an interest in the general affairs of his profession and his community. He had the qualifications of a leader and did not grudge the time and effort needed to make his leadership effective. As President of the Providence Medical Association and of the Rhode Island Medical Society, and in many other positions, he rendered distinguished service. This is particularly true of his work for over ten years as Chairman of the Publications Committee of this JOURNAL and since he became its Editor-in-Chief in 1956.

Although he is no more its leader, the JOURNAL in its work will long feel the influence of his wisdom, his judgment, and his kindly spirit which will be a lasting inspiration to those who carry on in the years to come.

\* \* \*

*WHEREAS* Doctor JOHN E. DONLEY has served the medical profession of Rhode Island with great distinction throughout his lifetime, and

*WHEREAS* he was President of the Providence Medical Association in 1931, and the Rhode Island Medical Society in 1936-37, and in 1954 he was named by the Society as its Charles Value Chapin Orator, and

*WHEREAS* his services as Editor-in-Chief of the RHODE ISLAND MEDICAL JOURNAL, after many years as an associate editor and as a member of the Publications Committee, has aided in making that publication one of the best edited medical journals of its kind,

*THEREFORE*, Be It Resolved that this House of Delegates of the Rhode Island Medical Society, assembled in meeting on September 28, 1960, express its sorrow in the death of Doctor John E. Donley whose contributions to the Rhode Island medical profession, and to this Society have been so great.

Unanimously Adopted by the House of Delegates of the Rhode Island Medical Society at its Meeting on September 28, 1960.

## INFANT MORTALITY TRENDS

**I**N THE May issue of PUBLIC HEALTH REPORTS, Doctor Moriyama, chief of the Mortality Section, National Office of Vital Statistics, Public Health Service, reports that since 1950 the infant mortality rates not only for the United States but for many other countries as well have practically leveled off.

His statistical data generally support the following conclusions:

1. That infant mortality rates in the United States were declining at a steady pace (4.3 per cent per annum) until 1950 when the rate of decrease dropped to 2 per cent per annum. Since 1956 it would appear from available provisional data that the infant mortality rate is increasing.

2. Certain individual states do not conform to the average rate change, and it would appear that this variability is due to the degree of urbanization present in these states. The more rural states still tend to show a declining mortality rate while the more urbanized states show the leveling-off effect of an actual increase in the infant mortality rate.

3. Although the conclusion is not statistically incontrovertible, it would appear that the decline in mortality rates is due to the failure of further decreases in the number of deaths due to pneumonia and influenza since about 1950. Since the neonatal death rate or infant deaths before twenty-eight days of life have remained relatively constant, the slowing down of the post-neonatal death rate or infant deaths between one and twelve months due primarily to pneumonia and influenza, a base line has been reached which cannot be improved upon with current means of therapy. Numerous deaths from pneumonia and influenza still occur, and there is evidence that the development of drug-resistant organisms may prevent further reduction of this cause of infant deaths.

4. To effect any further drastic reduction of infant deaths, the basic and relatively unchanging neonatal death rate must be reduced by effectively combating deaths due to prematurity, post-natal asphyxia and atelectasis, hyaline membrane disease, birth injuries, and congenital malformations.

As might be expected, Rhode Island has followed trends established by Doctor Moriyama for urban states. Our figures for infant mortality have shown a rapid decline from a rate of 72 per thousand live births in 1929 to a rate of 35.3 in 1944. In 1945 coincident with an increased civilian availability of penicillin, the rate dropped precipitously to 28.2 and declined very slowly to about an average of 24 until the year 1957.

In 1958 the rate was only 21.2 but increased to 23.2 in 1959. In 1959, however, we suspect that lowering the gestational age requirement for reporting births may, in part, explain this rise since the major portion of the increase in infant mortality can be attributed to the larger numbers of neonatal deaths. The rates for the United States were 26.9 and 26.4 for 1958 and 1959 respectively.

In Rhode Island the neonatal death rate has remained fairly constant between 16.3 and 23 per thousand live births between the years 1946 and 1958. In 1959 the neonatal death rate was 17.6 in Rhode Island and 19.1 in the United States.

Review of the chief causes of death in Rhode Island shows close correlation with those of the United States as a whole. Prematurity led the list while postnatal asphyxia and atelectasis, congenital malformations, birth injury, pneumonia and influenza, and hyaline membrane disease in this order accounted for the great bulk of the remaining causes of death.

Doctor Moriyama's report clearly defines for us the areas which remain as a challenge to medicine is the result of the pathological entities in their severest form, but there are much larger numbers of physically and mentally handicapped living individuals who result from these processes in their mild to moderate forms.

It is gratifying to know, therefore, that within our own state of Rhode Island as well as in other communities integrated studies are in progress to define more clearly effective points of attack on the major causes of infant mortality.

Here in Rhode Island, for example, promising ideas are being developed and investigated toward effective treatment and prevention of hyaline membrane disease in the newborn.

## AN INDEPENDENT NEWSPAPER

Our leading daily newspaper in Rhode Island prides itself on being "An Independent Newspaper." Just what it means by independent is not always clear to its readers, possibly because there are several meanings attached to the word "independent." We suspect the newspaper means that it is not controlled by others, and as such it is free and unrestricted in its published statements. If that is the case, it then has an important duty to itself and the community to be sure that it does not allow its self-reliance to assert itself to the detriment of the public.

On August 3 the EVENING BULLETIN editors, in our opinion, allowed their "independent" thinking to run a bit too freely, and in a way dangerous to the community's health. On that date, with no explanation or comment as to the authenticity of the statements made in a letter to its editors, the BULLETIN published a letter reportedly written by a chiropractic physician, if we interpret the letters "D.C." correctly after the writer's name, in which the following statements were made:

"The primary source of stress in the spine is a tipping to the anterior and inferior of the sacral base, with a subsequent tightening of both spinae erector groups of muscles, the anterior and posterior longitudinal ligaments and capsular ligaments.

*"Any person without this distortion is absolutely immune to polio* (italics added). Therefore a little common sense applied in the home could stop this epidemic (of polio) in short order. If every mother would place her child on his tummy with a pillow or hassock under the hip bones, in such a way as to diminish the low back anterior curve, stress would lessen and polio would become a memory."

That any reputable newspaper would lend credence to this theory unsupported by any reliable medical testimony is almost unbelievable. That a newspaper would give space to such comments in the midst of a statewide polio epidemic in which the entire community, including the newspaper itself, was seeking to control polio through the only proved method, inoculation with an approved vaccine, is incredible! Does zeal for impartiality sanction irresponsibility in such a vital matter?

Being an independent newspaper certainly doesn't mean freedom to publish willy-nilly statements without comment when such statements are read by persons who trust the newspaper not to give them misleading information concerning their health. We hope and pray that no mother in Rhode Island will accept the free advice of the advocate of drugless healing given support through the state's leading evening newspaper in the *Evening Mail* column of August 3.

Prophylaxis by application of a vaccine approved by the United States Public Health Service—the Salk vaccine or any others that may subsequently be accepted—remains the most effective method of combatting poliomyelitis.

## POLITICAL PLANKS

### *Medical Care for Aged*

**REPUBLICAN** — Promised program that would provide elderly persons needing it, on a sound fiscal basis and through a contributory system, protection against burdensome costs of health care. Aged would have option of carrying private health insurance. For the aged unable to pay, federal government would make grants to

states to help finance state programs.

**DEMOCRATIC** — Pledged medical care benefits for the aged financed under the Social Security system. Rejected any proposal which would require the aged to submit to a means test to determine eligibility for federal aid.

\* \* \*

### *Government Finance*

**REPUBLICAN** — Promised efforts to make federal government live within its means by reducing unessential expenditures and pledged to work for reduction of national debt. Would resist efforts to weaken ability of Federal Reserve System to control money and credit for the purpose of combating both inflation and deflation. Predicted national defense needs will continue to make enormous demands upon public revenues.

**DEMOCRATIC** — Rejected the notion the nation cannot afford to meet welfare and related needs of its people at home and in its world relationships. Expressed belief such needs can be met—except in periods of recession or national emergency—with a balanced budget, with no increase in tax rates. Promised, however, to seek additional taxes should present levies prove inadequate.

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## THE USE OF AN ALDOSTERONE ANTAGONIST IN PATIENTS WITH RESISTANT EDEMA

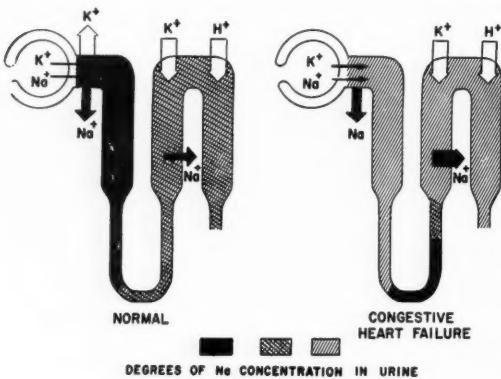
MIECZYSLAW GARBER, M.D.

The Author, Mieczyslaw Garber, M.D., Junior Resident in Medicine, Department of Medicine, Rhode Island Hospital, Providence. Formerly Resident in Medicine at Miriam Hospital, Providence.

**I**T IS WELL KNOWN that the adrenal cortex tends to promote sodium conservation by the kidneys. The most potent sodium retaining hormone of the adrenal cortex is aldosterone. Lack of ability to secrete aldosterone explains the sodium depletion in untreated Addison's disease.

Clinical observations strongly suggest that aldosterone has a role in the cause and maintenance of edema in some pathological conditions of the heart, liver, and kidneys. There are various concepts explaining the causes of edema in the conditions mentioned.

In congestive heart failure there is a reduction in glomerular filtration rate. Thus reduced amounts of sodium arrive at the renal tubules. This stimulates an increase of aldosterone secretion and consequently more complete reabsorption of sodium in the distal tubules.



Adrenalectomy in these patients is followed by prompt diuresis and loss of edema.

Other mechanisms are incriminated in liver cirrhosis. The impaired inactivation of the hormone by the damaged liver tissue may result in an increase of the amount of biologically active aldosterone in the blood and urine.

There is a different explanation for the secondary hyperaldosteronism of the nephrotic syndrome. It is known that the contraction of the extra-cellular fluid volume is a strong stimulus to aldosterone secretion and inversely its expansion inhibits the aldosterone production.

In nephrosis the hypoproteinemia results in escape of fluids from the blood vessels to the extravascular compartment and the consequent hypovolemia might be responsible for the excess of aldosterone secretion.

At present, we can only speculate on the reasons for the secondary hyperaldosteronism of the above-mentioned pathological conditions. Salt restriction in these patients is another contributory factor. Deprivation of sodium results in an excess aldosterone production. As a matter of fact, aldosterone does not cause edema by itself. It is only an accessory and contributory factor for edema formation.

It is possible to break the chain leading to edema in various ways:

*First:* By correcting the primary disturbance (for instance, improving the cardiac condition);

*Second:* By inhibiting the biosynthesis of aldosterone within the adrenal cortex. An agent capable of doing this is Amphenone B (1, 2 bis. (P-Aminophenyl) — 2 methyl — 1 propanone dihydrochloride). However, it is too toxic for long-term treatment and has a widespread inhibitory effect upon many adrenocortical hormones, which limits its clinical use.

*Third:* By administering pharmacologic agents which interfere with the renal mechanisms for sodium reabsorption. All of the effective diuretics now in general use fall into this category.

*Fourth:* By blocking the action of aldosterone in the renal tubules and inducing loss of sodium in the urine.

Recently a series of new synthetic steroids have been produced which are reported to antagonize the renal effects of aldosterone and desoxy-corticosterone. Chemically they are characterized by having a spirolactone group on the 17th carbon atom of cyclopentenophenanthrene ring and therefore called 17-spirolactosteroids.

In the 17-spirolactosteroid X represents a methyl group or an H atom which increases the potency of

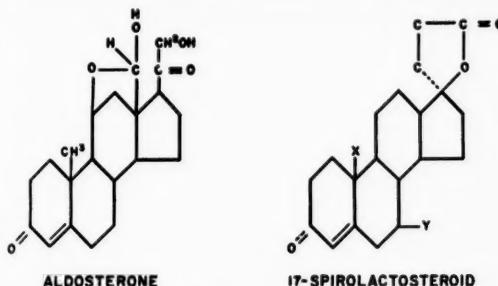


Fig. 2.

the first several times. In Aldactone (G. D. Searle) there is an added thioacetyl group which enhances oral absorption and also increases the potency of the compound. The mechanism of the block is unknown, but the similar configuration of the molecules of aldosterone and spiro lactone suggest that it acts by competition for receptor sites in target tissues.

The pharmacological studies showed that the 17-spirolactosteroids are not toxic (LD-50 in rats higher than 700 mg. per kg. of body weight), have no influence on body weight, hematocrit, CBC, carbohydrate metabolism or healing processes. The microscopic picture of parenchymatous organs (heart, kidneys, liver, adrenals, testes) is not affected by the spiro lactosteroids. No increase in the glomerular filtration rate or effective renal plasma flow occurs.

Several investigators have demonstrated aldosterone in the urine during spiro lactosteroid administration. This is a conclusive evidence that the synthesis of aldosterone is unchanged and even stimulated by the blocking effect of spiro lactone. The metabolic fate of 17-spirolactosteroids, is unknown. The onset of diuretic activity is gradual, occurring six to eight hours after administration with increasing response over approximately the first three days. The diuretic effect is present for approximately forty-eight to seventy-two hours after the drug is discontinued.

Spirolactone differs from other diuretics in that it is capable of producing an increased sodium excretion without potassium depletion. The effect on potassium loss by previously known diuretics may be explained by site of their action which is the proximal renal tubule. As a consequence an excessive exchange of sodium to potassium cations occurs in the distal tubule, stimulated by salt retaining adrenal steroids. Spirolactone blocks the aldosterone action on the distal tubule and therefore produces natriuresis without kaliuresis and does not lead to the common complication of hypokalemia.

Taylor reported recently that in spiro lactone-treated patients who were given potassium supple-

ments, weight loss was more rapid. The mechanism of this action is unexplained.

The administration of 17-spirolactosteroids is associated with an increased urinary output of chlorides and phosphates. There is usually a moderate decrease in urinary ammonium and a very marked decrease in urinary hydrogen.

When patients with edema or ascites are treated by using different diuretics the responses fall into three main groups: First group where mercurials and chlorothiazide produce an increase of sodium and chloride excretion with no change in potassium. Second group where the mentioned diuretics do not affect electrolyte excretion. Third group where the chlorides and potassium excretion rise and the excretion of sodium is insignificant. 17-spirolactosteroids may be of little value in the first two groups but are of considerable value in the third group. They increase, by themselves, the sodium excretion and when given with chlorothiazide they always greatly reduce the potassium loss and increase the sodium excretion very markedly. The action of these two drugs is not only a summation but a true synergistic potentiation. 17-spirolactosteroids are of special value in cases refractory to other diuretics.

The present report concerns the use of a 17-spirolactosteroid (Aldactone) in a nephrotic syndrome and in congestive heart failure with cardiac cirrhosis of the liver resistant to ordinary therapy.

#### Case Report

B. J., a twenty-four-year-old negro male was admitted to the hospital with increasing edema of the face, eyes, scrotum, lumbosacral area and lower abdominal wall. Patient claimed that six months prior to admission he was treated for backache with heat treatment. One week before entrance to the hospital he had a cold and sore throat. He received a penicillin injection and a day prior to admission became edematous. His systems review was not remarkable and past history not contributory. On physical examination the most notable positive finding was a pitting edema 2+ as described above. Patient had multiple carious teeth. The heart appeared slightly enlarged. The point of maximal impulse was 2 cm. anterior to the left anterior axillary line. A systolic thrill was present and Grade III-IV harsh systolic murmur was audible over the apex and the aortic area and P2 was accentuated. The costovertebral angle area was tender bilaterally. Blood pressure 145/75 and pulse rate 72/min.

*Laboratory data:* Albuminuria of 3 to 4+ was present throughout patient's hospitalization. 0-4 WBC and occasional RBC were seen in the urinary sediment. Many hyaline and granular casts were

*continued on next page*

seen, specific gravity varied from 1.010 to 1.028.

The hemoglobin level and complete blood count were within normal limits, cholesterol was 389 mg.%. The fasting blood sugar was 94 mg.%, urea nitrogen 13.6 mg.%, creatinine 1.8 mg.%. The total protein in blood serum 3.8 gm.-%—3.5 gm.%. Albumin limits were 0.9—1.3 gm.%, globulins 2.4—2.6 gm.%. Electrophoresis was consistent with the decrease of albumin and increase of alpha 2 and beta globulins. The gamma globulins were slightly diminished. Electrolytes were normal, NA—134 mEq/L, K—4.4 mEq/L, CL—100 mEq/L. Other lab. data showed VDRL—negative, antistreptolysin titer 200 Todds units (repeated twice), urine culture negative. Throat culture gave a growth of streptococcus viridans and neisseria. Sediment rate 30 mm/hr, C-reactive protein-negative. The inorganic phosphorus 4.2 mg.% and calcium 9.0 mg.%. The chest X ray and complete gastro-intestine series were negative. Blood pressure—145/90, pulse—70 per minute.

The patient weighed 190 lbs. on admittance. He was treated with multivitamins and vitamin C and diuretics as illustrated (Table 1). The sixth day of hospitalization, the patient was administered 40 mg. of prednisone and penicillin and 12 lb. weight loss was observed during the next two weeks. The patient became refractory to this treatment but was continued for another seven days on prednisone. For the next five days patient received no therapy and made little response.

Chlorthiazide, 1000 mg. daily was added on the thirtieth day and made only slight response, 4 lbs. in four days and the patient remained edematous. Aldactone 400 mg. daily was added with spectacular results. The patient lost 11 lbs. in five days. To verify that this was due to the 17-spirolactosteroid, we omitted the drug. The patient maintained effective diuresis for the next seventy-two hours, then became edematous with resultant rapid weight gain. Aldactone was again added to the chlorthiazide and again a remarkable diuresis was

noted which continued for seventy-two hours after the aldactone was stopped. Electrolytes were checked the day after aldactone was omitted and no change noted, NA—136 mEq/L, K—4.4 mEq/L Chlorides 100 mEq/L. The patient was discharged on the fifty-fourth day edema free to be followed by out-patient clinic.

#### Second Case

A fifty-four-year-old white male, well known from several previous admissions to this hospital to have rheumatic heart disease, mitral insufficiency, congestive heart failure. Last discharge four months ago with improvement of his heart failure. He had been followed by out-patient department and was receiving digoxin 0.25 mg. twice daily and 100 mg. of hydrochlorothiazide.

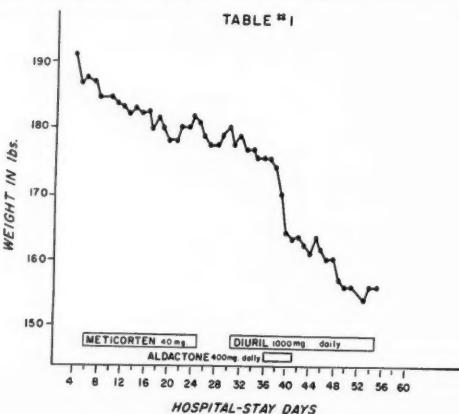
Two weeks prior to this admission he again became increasingly edematous with cyanosis, shortness of breath and abdominal distention. He was admitted with severe distress and dyspnea. Pitting edema, grade 4, and pronounced cyanosis of the extremities, cheeks, lips, etc., was noted. The skin showed a grayish-yellow tinge. Percussion of chest revealed bilateral dullness 3 finger breadths below the inferior scapular angles. Upon auscultation midsized, moist rales scattered throughout lung fields were audible. The heart was enlarged to left about 4 cm. from the mid-clavicular line. There was a complete arrhythmia, a systolic murmur, Grade II, over the apex radiating to the axilla with a cardiac rate 104 per minute and peripheral pulse deficit 10-15 per minute. The pulmonary second sound was accentuated and the blood pressure was 140/95. The abdomen was distended with signs of free fluid in the peritoneal cavity. The liver was felt 3 finger breadths below the costal margin. The skin of the lower extremities showed a purplish-blue discoloration and an indurative 4+ edema. Laboratory data revealed free bilirubin 1.4 mg. and total 1.7 mg. Alkaline phosphatase 14.2 Bodansky units. Serum proteins 5 gm.% with A/G ratio 2.4/2.6. The blood urea nitrogen and creatinine were normal.

The chest X ray and fluoroscopy revealed a markedly enlarged cardiac silhouette and 3+ enlargement of left auricle, evidence of cardiac decompensation in the lungs. In conclusion, the X-ray study was indicative of mitral insufficiency and suggesting a superimposed aortic disease. The electrocardiogram showed auricular fibrillation with ventricular response 80-90 per minute, and signs of digitalis effect. Patient obviously had rheumatic heart disease, chronic congestive failure and cardiac pseudocirrhosis of the liver.

Soon after admission abdominal paracentesis was performed and 4.8 liters of yellow-brownish ascitic fluid removed. Despite increasing the dose

*concluded on page 650*

TABLE #1



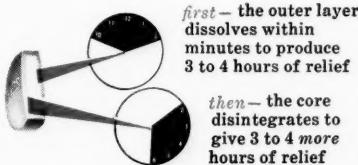


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*Indications:* nasal and paranasal congestion, sinusitis, postnasal drip, upper respiratory allergy.

*Each Triaminic timed-release Tablet provides:*

Phenylpropanolamine HCl .....	50 mg.
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Pyrilamine maleate .....	25 mg.

*Dosage:* 1 tablet in the morning, midafternoon and at bedtime. In postnasal drip, 1 tablet at bedtime is usually sufficient.

*Each timed-release Triaminic Juvelet® provides:*

$\frac{1}{2}$  the formulation of the Triaminic Tablet.

*Dosage:* 1 Juvelet in the morning, midafternoon and at bedtime.

*Each tsp. (5 ml.) of Triaminic Syrup provides:*

$\frac{1}{4}$  the formulation of the Triaminic Tablet.

*Dosage (to be administered every 3 or 4 hours):*

*Adults* — 1 or 2 tsp.; *Children 6 to 12* — 1 tsp.;

*Children 1 to 6* —  $\frac{1}{2}$  tsp.; *Children under 1* —  $\frac{1}{4}$  tsp.

# TRIAMINIC®

timed-release tablets, juvelets, and syrup



running noses  and open stuffed noses orally

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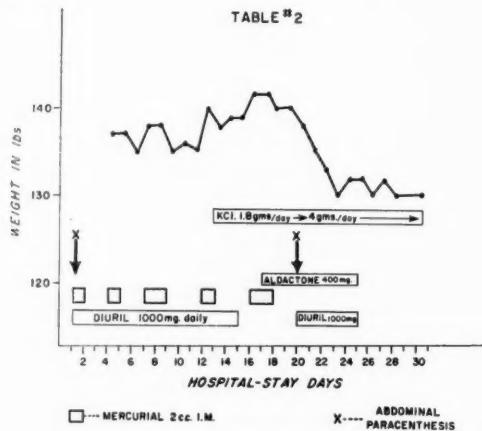
### USE OF AN ALDOSTERONE ANTAGONIST IN PATIENTS WITH A RESISTANT EDEMA

*concluded from page 648*

of digoxin and diuril and intermittent thiomerin, no loss of weight could be achieved and the ascitic fluid began to accumulate again.

Patient now had resisted all usual diuretic therapy and on the fifteenth day we discontinued previous diuretics and started aldactone 400 mg. daily. There was no response and the urinary output in fact decreased. The patient's condition deteriorated and the second night on this regime 2 c.c. of mercuhydrin was injected. Aldactone was continued for three days as the sole diuretic agent with no significant urinary response or weight loss. A second paracentesis was performed and 1750 ml. of ascitic fluid removed. Chlorthiazide, 1000 mg. daily, was added to the aldactone with a marked weight loss and improvement of the edema and dyspnea, without significant accumulation of ascitic fluid. Weight loss continued despite the discontinuance of salt restriction because of the low serum sodium (Na 130 ME/L). Aldactone did not increase the extracellular sodium deficit, or serum potassium level. No side effects were noticed and patient was discharged six days later with improvement of failure.

TABLE #2



We presented two cases with severe and refractory edema, one with the nephrotic syndrome and the other with congestive cardiac failure, hepatic cirrhosis and ascites and hydrothorax. It is difficult, on the basis of two patients to draw general conclusions. It seems, however, that 17-spirolactosteroids are and will be useful in cases refractory to other diuretics. The spiro lactone by itself may be unable to produce adequate diuresis but it appears to be a very good adjuvant when used with another conventional diuretic. The spiro lactone acts as an aldosterone antagonist augmenting the sodium excretion while diminishing the potassium depletion of usual diuretics.

### RHODE ISLAND MEDICAL JOURNAL

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Syncillin Tablets - 250 mg. (400,000 units) ... Syncillin Tablets - 125 mg. (200,000 units)

Syncillin for Oral Solution - 60 ml. bottles - when reconstituted, 125 mg. (200,000 units) per 5 ml.

Syncillin Pediatric Drops - 1.5 Gm. bottles. Calibrated dropper delivers 125 mg. (200,000 units)

Complete information on indications, dosage and precautions is included in the circular accompanying each package.

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## ACUTE PHARYNGITIS

SYNCILLIN®

500 mg. t.i.d. - 5 days

W. M. 24-year-old-male. Admitted with sore throat which had progressed rapidly in severity for 24 hrs. Temp. 104.4. Pulse 110. Acute pharyngitis and enlarged, red, bulging tonsils covered with pus. Throat culture revealed beta hemolytic strep. Patient given 500 mg. SYNCILLIN t.i.d. Within 24 hrs., fever terminated by crisis with marked relief of local signs and symptoms.

After 5 days, infection was cured.

Actual case summary  
from the files of  
Bristol Laboratories'  
Medical Department



## A.M.A. INTERIM SESSION AT WASHINGTON TO FEATURE TOP SCIENTIFIC PROGRAM

THE FOURTEENTH CLINICAL MEETING of the American Medical Association in Washington, November 28-December 1, will offer a well-rounded, stimulating scientific program designed to interest both family physicians and specialists. The symposia, presentations, and discussions will stress the theme, *New Developments in Old Diseases and Old Developments in New Diseases*.

Participants will include proponents of both sides where different views exist on the management of a disease or medical condition. For example, should tonsils be removed when mildly involved or only when they are badly diseased?

The patient's side will also be heard on one symposium. Clarence B. Randall, an industrialist and special assistant to President Eisenhower, will talk on coronary disease from the patient's viewpoint. Other participants and their topics on this panel are:

A. CARLTON ERNSTENE, Moderator, Cleveland, Ohio

THOMAS W. MATTINGLY, Washington, D. C.  
*Can Coronary Patients be Predicted by Clinical or Physiologic Measurements?*

DONALD S. FREDRICKSON, Bethesda, Maryland  
*Fat Metabolism as a Background to the Development of Coronary Atherosclerotic Disease*

VICTOR A. MCKUSICK, Baltimore, Maryland  
*Genetic Background of Patients with Coronary Vascular Disease*

EUGENE A. STEAD, JR., Durham, North Carolina  
*Management of the Dietary and Psychologic Problems of the Patient with Coronary Disease*

*The Problem of Management of Nodules*, always perplexing for both the specialist and the family physician, will be discussed by three panels concerned with breast nodules, the solitary pulmonary nodule, and nodules of the neck.

Another panel will discuss *Recent Advances of the Use of Antibiotics and Steroids*, and additional symposia will cover areas in obstetrics-gynecology, pediatrics, edema, cirrhosis and liver diseases, renal problems, osteoporosis, thyrotoxicosis, eye problems, orthopedic surgery and trauma, clinical nutrition and bronchopulmonary disease.

Outstanding physicians and research scientists from throughout the nation will conduct the scientific program, and the timetable of discussions has

been arranged so that physicians may attend the maximum number of sessions and participate in discussions in the particular fields in which they are most interested.

All the scientific sessions will be held at the District of Columbia National Guard Armory. Starting at 9:30 A. M., Monday, November 28, and running until 11:30 A. M., Thursday, December 1, three sections in both morning and afternoon will be held simultaneously in separate rooms at the Armory. One section will be devoted to presentations of formal papers, another to panel discussions, and the third will be a symposium, all of which have question-and-answer periods.

Another important and integral part of the clinical meeting will be the Scientific Exhibit which will contain approximately 125 exhibits in the Armory. Many of these will relate to such specific subjects as cardiovascular conditions, arthritis and rheumatism, and cancer. Others will be grouped into rather broad areas such as neurology and psychiatry, pediatrics, orthopedics, dermatology, drug therapy, surgery, ophthalmology and otolaryngology, obstetrics and gynecology, and laboratory and clinical investigation. Special demonstration exhibits on fractures and problems in delivery will also be included.

Over 100 exhibits will make up the Industrial Exhibition, also in the Armory, where the products, services, and aids provided by industry to physicians and their patients will be on display and staffed by competent and knowledgeable attendants.

Medical motion pictures will be shown at the Armory, as well as closed color television showings originating in Georgetown University Hospital. Six one-hour TV presentations will be devoted to dermatology, pediatrics, emergency treatment of major injuries, newer methods of surgical treatment of peptic ulcer, orthopedics and pathology.

Three scientific breakfasts will be held on both Tuesday and Wednesday at the Statler Hotel with the themes of *To Do or Not To Do* and *Problems of Management* in particular diseases or types of cases.

*The entire scientific program of the Clinical meeting appears in the October 22 issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.*

# they help the cough remove its cause

These elegant antitussives comprise a group of significantly superior expectorants from which you may select the formula best suited for your coughing patient.

First of all, they have more in common than mere delectability to eye and palate: they all include *glyceryl guaiacolate*. This remarkable expectorant aids the coughing mechanism by increasing the secretion of Respiratory Tract Fluid,<sup>1</sup> which helps liquefy sputum,<sup>1,3</sup> makes bronchial and tracheal cilia more efficient,<sup>1,2</sup> and acts as a demulcent.<sup>1,3-5</sup> Through its effects, all four expectorants promote the natural purpose of the cough, which is to remove the irritants that cause it.<sup>1,2</sup>

In addition, the Robins antitussive armamentarium provides a choice of widely accepted drugs in various combinations with glyceryl guaiacolate for treating different kinds of coughs and associated symptoms. For antihistaminic effects, there is Dimetane® or prophenyridamine; for bronchodilation and nasal decongestion, there are sympathomimetic agents; and for suppression of the "too frequent" cough, there is codeine or dihydrocodeinone.

**References:** 1. Cass, L. J., and Frederik, W. S.: Am. Pract. & Digest Treat. 2:844, 1951. 2. Blanchard, K., and Ford, R. A.: Journal-Lancet 74:443, 1954. 3. Hayes, E. W., and Jacobs, L. S.: Dis. Chest 30:441, 1956. 4. Blanchard, K., and Ford, R. A.: Rocky Mountain M. J., Vol. 52, No. 3, 1955. 5. Boyd, E. M., and Pearson: Am. J. M. Sc. 211:602, 1946. **A.H. ROBINS COMPANY, INC., RICHMOND 20, VIRGINIA**

## Robitussin®



Each teaspoonful contains:

Glyceryl guaiacolate ..... 100 mg.

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Prophenyridamine maleate ..... 7.5 mg.

Codeine phosphate ..... 10 mg.

(exempt narcotic)

## Dimetane®



## Expectorant

Each teaspoonful contains:

Parabromdylamine maleate  
(DIMETANE) ..... 2 mg.

Glyceryl guaiacolate ..... 100 mg.

Phenylephrine HCl, USP ..... 5 mg.

Phenylpropanolamine HCl,  
NNR ..... 5 mg.

## Dimetane®



## Expectorant-DC

Each teaspoonful contains the  
Dimetane Expectorant formula  
plus Dihydrocodeinone  
bitartrate, NF ..... 1.8 mg.  
(exempt narcotic)



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selected by over 9,000 doctors  
for their own use**

**Assures both preventive and corrective support—used in  
more American homes than any other special design**

Sealy Posturepedic is the first mattress designed in cooperation with leading orthopedic surgeons to promote normal, healthful sleep among *all* persons.

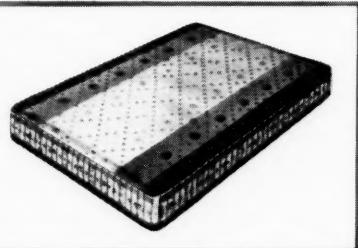
As a "corrective device" it serves those chronically afflicted with lower back syndromes. As a preventive measure Sealy Posturepedic brings deep spring buoyancy without bedboard hardness to everyone—plus the concomitant blessings of unexcelled comfort and extra-firm support.

These are basic to good health. The therapeutic value of restful sleep is especially recognized during these tense and anxious days. Sealy Posturepedic eminently meets this need by supplying level spine support for proper relaxation of the limbs and human musculatory system.

Over 9,000 doctors of medicine have tried and bought the Sealy Posturepedic mattress and matching foundation for their own use. We believe your investigation will firmly convince you of its distinctive benefits, and, we would hope, merit your valued recommendation.

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**NO MORNING  
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each \$79.50      (add state tax)      \$60.00  
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Acid stable, highly soluble

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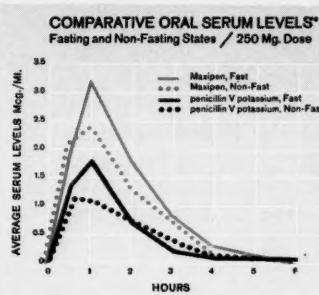
### Maximal Oral Indications

Indicated in infections caused by streptococci, pneumococci, susceptible staphylococci, and gonococci

**DOSAGE:** For moderately severe conditions, 125 to 250 mg. three times daily. For more severe conditions, 500 mg. as often as every four hours around the clock.

**NOTE:** To date, MAXIPEN has not shown less allergic reactions than older oral penicillins. Usual precautions regarding penicillin administration should be observed.

**SUPPLIED:** MAXIPEN TABLETS, scored, 125 mg. (200,000 units), bottles of 36; 250 mg. (400,000 units), bottles of 24 and 100 tablets. MAXIPEN FOR ORAL SOLUTION; reconstituted each 5 cc. contains 125 mg. (200,000 units), in 60 cc. bottles.



\*Based on 3294 individual serum antibiotic determinations. Complete details available on request.

**MAXIPEN**, the orally maximal penicillin, is a triumph of man over molecule; a product of Pfizer Research



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*the Microscope*

#### **Department Store Creates Medical School Scholarship Fund**

A Cleveland department store has set up a fund of \$100,000 for the School of Medicine at Western Reserve University, President John S. Millis announced recently.

The Higbee Company, headed by John P. Murphy, is celebrating one hundred years in Cleveland and has created the Higbee Centennial Loan Fund to aid deserving medical students with loans and scholarships. An annual contribution of \$10,000 for ten years will aggregate \$100,000.

Doctor John L. Caughey, Jr., associate dean of the School of Medicine, announced that the first loans from the fund will be made to Western Reserve medical students this fall.

The loans will be made on a long-term basis with repayment not required until the student completes his medical training. No interest will be charged until repayment begins.

The medical school official said the loan fund will meet a growing need for aid among medical students. At present, he said, nearly one third of all tuition to the medical school is in the form of loans.

#### **Men Top Women in Ulcers, 3 To 1**

More than 2.4 million Americans have ulcers, and nearly three times as many men have ulcers as do women, the Health Insurance Institute reported recently.

Some 1,771,000 men have some form of peptic ulcer, including gastric, duodenal, and gastroesophageal ulcers, compared to 669,000 women, the Institute said in reporting for the first time data from the U. S. National Health Survey on the prevalence of ulcers.

Reports indicate, said the Institute, that ulcers are four times as common among Americans now as they were in the 1930's.

A National Health Survey in 1935-36 showed that less than three out of every 1,000 persons in the population had an ulcer. The latest survey, cov-

ering the 1957-59 period, disclosed that 14 out of every 1,000 persons in the civilian population were so afflicted. However, this seeming quadrupling of the ulcer rate has been attributed in part to more accurate methods of diagnosis through wider use of X-ray equipment.

Other statistics, said the Institute, strengthen the impression that the prevalence rate of ulcers has quadrupled. Over a 20-year span, the rate of hospital admissions for ulcers has grown from .4 admissions per 1,000 persons per year to 1.7.

#### **Surgeon General Announces Plans for Division of Occupational Health**

The strengthening of the Public Health Service's nation-wide program to protect the health of American workers through the creation of a new Division of Occupational Health was announced recently by the Surgeon General.

The new Division, which replaces the Occupational Health Program, follows the recommendation of the Study Group on Mission and Organization of the Public Health Service, designed to place greater emphasis on all types of environmental health hazards. It provides for "long-needed increased efforts" in the occupational health field as recommended to the Surgeon General by the Study Group. Doctor Harold J. Magnuson has been named chief of the new Division.

To keep pace with a changing technology and multiplying hazards in the work environment, the Division will carry out an expanded research program directed at developing better techniques, materials, and equipment for use in the prevention, diagnosis, and treatment of occupational disease. Major research efforts will be intensified in toxicology and in related fields of clinical medicine, engineering, chemistry, and physics. In addition, the physiological and psychological factors in the work environment will come under more penetrating study.

Greater emphasis will also be focused on the training of personnel in occupational medicine

*continued on page 658*

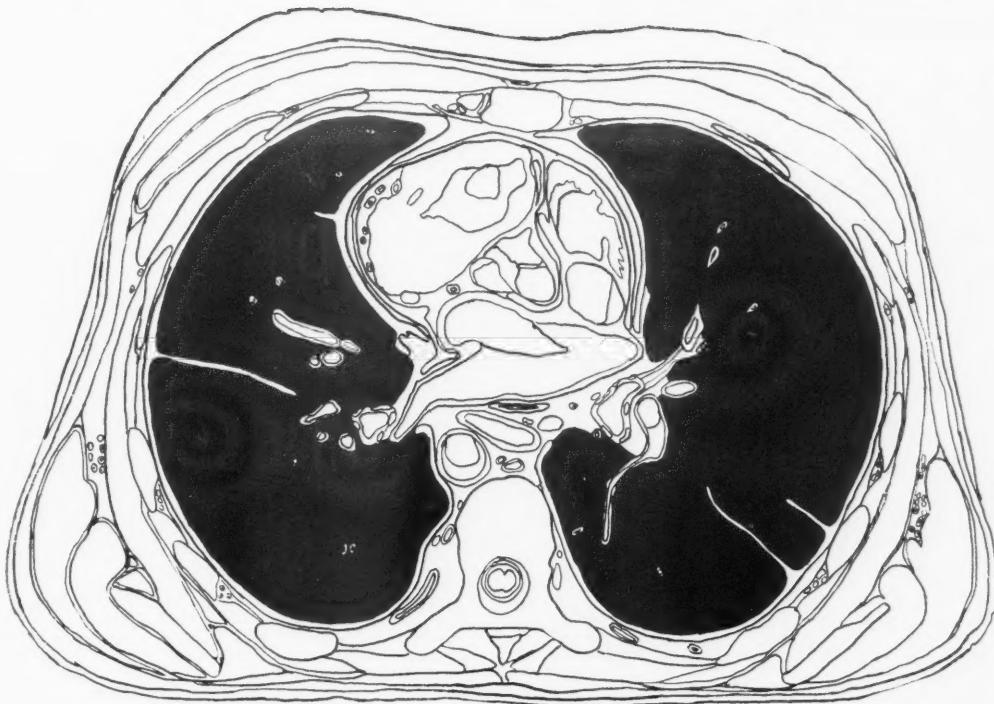
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The Original Tetracycline Phosphate Complex

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**THROUGH THE MICROSCOPE***continued from page 656*

and nursing and in industrial hygiene to meet the needs of this rapidly growing field. The Division will work with academic institutions and other groups to help develop the necessary professional resources.

A third area of major expansion is in state aid services, designed to support and assist official agencies in the development and operation of occupational health programs throughout the nation.

The Division will also be responsible for stimulating effective community and industrial efforts to supply occupational health services.

**Project Hope Launched by  
Pharmaceutical Manufacturers**

Fifty-two of the nation's leading prescription drug manufacturers have contributed in excess of \$780,000 in products and cash to Project HOPE, according to Doctor William B. Walsh, president of the People - to - People Health Foundations, sponsor of the Project. Over \$100,000 of the companies' contributions were in cash. Product values were computed according to manufacturers' wholesale prices.

**RHODE ISLAND MEDICAL JOURNAL**

The donations, co-ordinated by the Pharmaceutical Manufacturers Association, came from P.M.A. member companies.

A part of President Eisenhower's People-to-People program, Project HOPE sent a 15,000 ton hospital ship, the *SS Hope I*, to Southeast Asia on September 22. Staffed with American doctors, nurses, and medical technicians, the floating medical center will bring modern medical knowledge and techniques to the medical and health professions of newly developing countries throughout the world.

**Government Health Workers Increasing**

One out of every ten civilian government employees is a health or hospital worker, the Health Insurance Institute said recently.

There were 8.5 million civilian public employees in October, 1959, said the Institute in its analysis of government employment statistics. Of this total, 2.4 million were federal workers and 6.1 million were employees of state or local governments.

Some 168,000 federal employees, 319,000 state and 334,000 local government workers were employed in the health or hospital fields for a total of 821,000 persons. Federal health workers are

**hearing improved...**

tinnitus  
and vertigo  
relieved in  
circulatory disturbances  
of the  
inner ear<sup>1</sup>

**arlidin®**

brand of nylindrin  
hydrochloride N.N.D.

**effective in twice as many patients**

In patients with disturbances of the inner ear—impaired hearing, tinnitus or vertigo—Arlidin produced remission of their chief complaint in over 50% of cases. Rubin and Anderson state "we were very much encouraged, inasmuch as no other vasodilator that we have used has ever achieved more than a 25 per cent response."

**"significant hearing improvement"**

was obtained in 32 of the 75 patients studied.

**rationale:**

The clinicians note that impairment in hearing, disturbance in balance, and tinnitus involving the inner ear "may be explained on the basis of labyrinthine artery insufficiency" due to spasm or obstruction of the vessels. Arlidin was found to be "superior to all other vasodilating measures" in increasing blood flow through these vessels and in allaying spasm.

defined by the Bureau of the Census as those employed by the Public Health Service or the Food and Drug Administration, while health workers on other levels of government are engaged in public health administration, research, nursing, immunization, clinics and other health activities.

These workers were paid \$250 million in wages in the month of October, 1959, which comprised eight per cent of the total civilian payroll of all governments for the month, \$3.1 billion.

Over a five-year period, the number of health and hospital workers has been increasing at a more rapid pace than the growth in the total number of government employees, declared the Institute.

From October, 1954, to the same month in 1959, the total number of public employees increased 17 per cent, from 7.2 million to 8.5 million. Over the same period, the number of health and hospital workers climbed 24 per cent, from 662,000 to 821,000.

Almost all of the latter growth was among state and local government employees. Federal health and hospital employment increased a little more than one per cent, from 166,000 to 168,000 workers, while state and local employees increased 32

per cent, from 496,000 to 653,000, the Institute said.

On a state level, New York is high and Alaska is low in terms of the proportion of health and hospital workers per 10,000 population in the state. New York has 62 such workers per 10,000 residents, Alaska 16.

#### ***Disaster Medical Care Conference Planned***

The "father of the H-bomb," Edward Teller, Ph.D., will head a list of prominent speakers at the eleventh annual County Medical Societies Disaster Medical Care Conference in Chicago, November 4-6.

The three-day meeting is sponsored by the American Medical Association's Council on National Security and will be held at the Palmer House.

Conference highlight will be a presentation by the newly formed Division of Health Mobilization of the United States Public Health Service which will outline a program of objectives and activities for preparing the nation to meet the health needs of the civilian population in the event of a national disaster.

*continued on next page*

aid  
to  
hearing  
in  
tablet form  
**arlidin**

...“superior to all other vasodilating measures in its effect on the labyrinthine arteries.”

...efficacious where other vasodilators failed



Arlidin is available in 6 mg. score tablets, and 5 mg. per cc. parenteral solution. See PDR for dosage and packaging.

Protected by U. S. Patent Number 2,661,372 and 2,661,373

1. Rubin, W., and Anderson, J. R.: Angiology 9:256, 1958.

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250 East 43rd Street, New York 17, N.Y.

### *Surgical Benefits are Climbing*

The American public received more than a half-billion dollars in benefits from insurance companies during 1959 to help pay for the cost of surgery, the Health Insurance Institute reported recently. The \$512,000,000 in surgical benefits was an increase of nine per cent over the \$470,000,000 paid out by insurance companies in 1958 to persons covered by surgical expense insurance, or by major medical expense insurance that provides benefits for operative procedures, said the Institute.

At the end of 1959, more than 72 million persons had surgical expense insurance through insurance companies. Blue Cross-Blue Shield and similar groups covered nearly 49 million persons for surgery and other health care groups protected 5.8 million. After deducting persons protected by more than one type of insuring organization, there was a net total of 116.9 million persons with surgical insurance, compared to 111.4 million persons a year earlier.

Nearly 128 million persons had hospital insurance at the end of 1959 which means, said the Institute, that more than 90 per cent of persons with health insurance have both hospital and surgical insurance.

Both the number of persons covered by insur-

### RHODE ISLAND MEDICAL JOURNAL

ance company surgical policies and the amount of surgical benefits paid by insurance companies are increasing steadily, with the growth in benefits outpacing the climb in coverage, the Institute said.

Coverage increased from 69 million in 1958 to 72 million in 1959, a boost of 4.5 per cent, while benefits increased nine per cent in the same period.

A comparison of a longer period, from 1956 to 1959, shows that surgical benefits increased nearly three times as fast as the number of persons covered by surgical insurance, said the Institute.

In the three years, the coverage went from 63 million to 72 million, an increase of 14.7 per cent, while benefits climbed from \$369 million to \$512 million for an increase of 38.8 per cent.

### *More Nurses Than Ever, But Supply Still Inadequate*

There are more nurses in this country now than ever before, but the supply is still inadequate to meet present needs, according to a recent issue of *PATTERNS OF DISEASE*, prepared by Parke, Davis & Company for the medical profession.

"Of the professional members of the health team, nurses have made the largest gain in numbers since 1900," *PATTERNS* reports.

In this period extending from 1900 to 1957, the ratio of nurses to doctors increased almost 200-fold—from 1 nurse per 100 physicians in 1900 to 194 nurses in 1957. In this same period, the ratio of dentists to doctors increased by slightly more than one-half (from 24 to 37 dentists per 100 physicians); and of pharmacists and other members of the health team slightly more than 3 times (from 35 to 114).

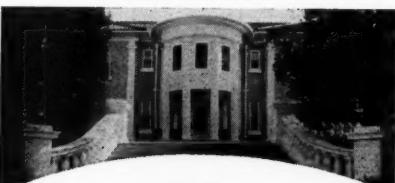
However, "although the number of professional nurses has increased  $2\frac{1}{2}$  times since 1920, still more are needed to meet present demand," *PATTERNS* asserts. "Positions are unfilled, wards close for lack of nurses, and many countries lack a public health nurse."

In 1958, for instance, about 11% of full-time nursing positions in hospitals were vacant, the publication states. Further, "individual hospitals may find the situation more critical." Thus, one large city has reported that "only 42% of the budgeted positions for professional nurses in its Department of Hospitals are filled."

Also a major need in the nursing field is for "more, qualified, top-level personnel," *PATTERNS* reveals.

It is estimated that by 1965 we will need 5,200 nurses with newly granted master's degrees each year, *PATTERNS* points out. However, in the academic year 1957-58 only 997 nurses were granted this degree—less than 1/5th of the number cited above.

*concluded on page 664*



### *Fuller Memorial Sanitarium*

**Located on Rt. 1**

**South Attleboro, Massachusetts**

A modern non-profit hospital for the care and treatment of nervous and emotional disorders as well as long term geriatric problems.

Physical, neurological, psychiatric and psychological examinations.

Modern recognized psychiatric therapies.

A pleasant homelike atmosphere in a beautiful and conveniently located institution.

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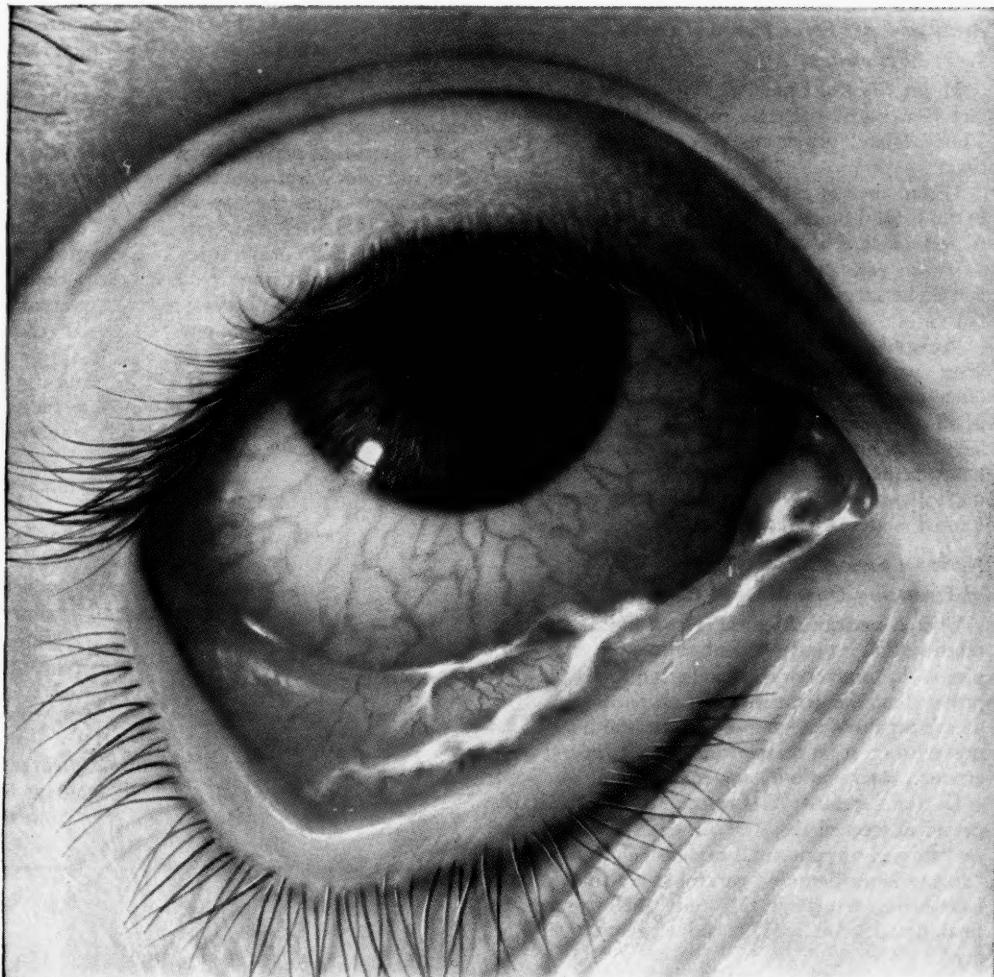
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1. Lippmann, O.: Arch. Ophth. 57:339, March 1957.  
 2. Gordon, D.M.: Am. J. Ophth. 46:740, November 1958.  
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## THROUGH THE MICROSCOPE

*concluded from page 660***Army and Air Force National Guard  
Seeks Physicians**

Major General Daniel S. T. Hinman, the Adjutant General of the state calls to the attention of Rhode Island physicians the following information:

"From time to time we have position vacancies in the United States Medical Corps for assignment to units of the Rhode Island Army National Guard, as well as vacancies in the United States Air Force for flight surgeons in the Rhode Island National Guard.

"It would be very much appreciated if you would keep our requirements in mind and refer to this office any interested doctor of the Rhode Island Medical Association. Without obligation, we would be glad to interview him and outline to him the many benefits of the commissioned officer in the medical service of the United States Army and United States Air Force."

**National Survey Shows Aged Capable  
of Financing Own Medical Care**

The American Medical Association reported recently that an independent national survey completed by university sociologists "emphatically proves that the great majority of Americans over 65 are capably financing their own health care and prefer to do it on their own, without federal government intervention."

Doctor Leonard W. Larson, Bismarck, N. D., president-elect of the A.M.A., described the study as "uniquely important," and urged Congress to "devote immediate and careful study to the basic facts brought forth in the study" before reaching final decision on medical aid legislation for the aged.

"The study disproves some dangerous misconceptions about the aged," Doctor Larson said. "It shows that most of these citizens are in good health, not sick, and are in moderately good financial condition, not hardship cases."

## RHODE ISLAND MEDICAL JOURNAL

The study was conducted by James W. Wiggins and Helmut Schoeck, director and associate director of the project. Both are members of the Department of Sociology and Anthropology of Emory University, Atlanta, Ga. The study was based on extended personal interviews among 1,500 non-institutionalized persons 65 years of age and over. The interviews were conducted by 100 trained interviewers under the supervision of professional sociologists, representing more than a dozen well-known American universities and colleges. Doctor Wiggins presented the first findings of the study before the Fifth Congress of the International Association of Gerontology at San Francisco, Thursday (August 11).

In his statement discussing the results of the study, Doctor Larson emphasized these facts:

Sixty-one per cent of the people interviewed considered their health was good; 29 per cent thought it was fair, and only 10 per cent thought it was poor.

Ninety per cent could think of no personal medical needs that were not being taken care of. A relatively small percentage of those who said they did have medical needs attributed the failure to meet these needs to lack of money. Often they said they had decided against treatment on the grounds it was not worth the "risk or trouble."

Sixty per cent said that they now are covered by private voluntary health insurance.

Sixty per cent said that if they sold everything they owned, and paid all their outstanding bills, they would have more than \$7,500 left in their bank accounts.

**MONDAY, NOVEMBER 7, 1960**

**Hear—MARK ALTSCHULE, M.D.**

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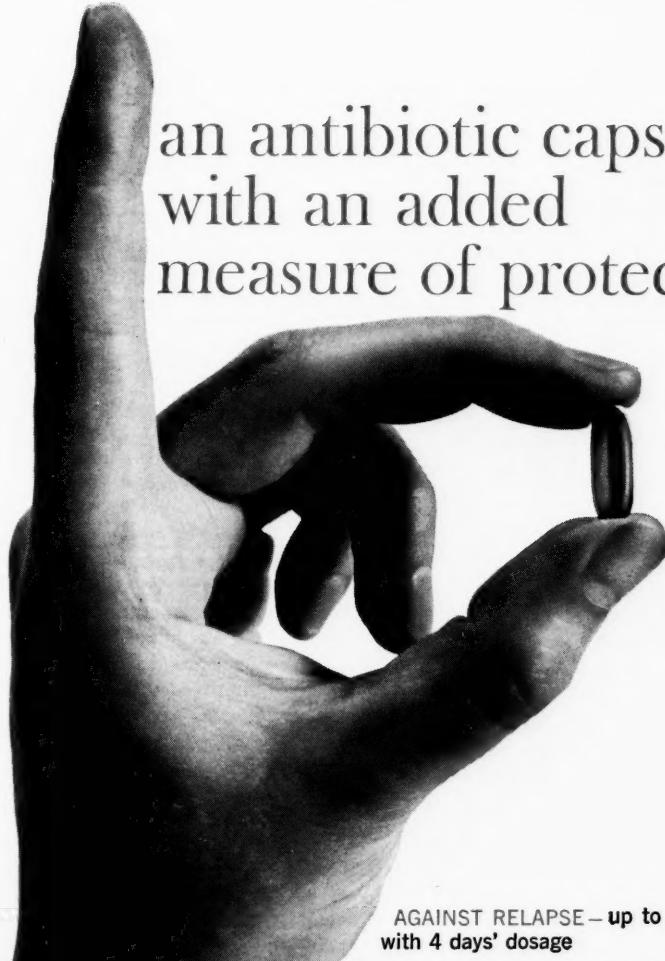
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## BOOK REVIEWS

Christopher's *TEXTBOOK OF SURGERY*.

Edited by Loyal Davis, M.D. Seventh ed., W. B. Saunders Company, Phil., 1960. \$17.00

This well-known volume remains one of the most commonly used surgical texts in United States medical schools. The thirty-four chapters covering the fields of general, thoracic, cardiac, pediatric, genitourinary, gynecologic, orthopedic, neurologic surgery and physical medicine, have been revised since the last edition in 1956. The chapter on infections is now current and includes a section on the prevention and control of hospital infections. A most interesting final chapter on *Surgical Judgment* has been added, which, because of its general interest and significance, might have been placed as Chapter 1.

Since medical schools in this country now have separate departments in gynecology, urology and orthopedics with specialized texts in those fields, it might be appropriate to devote more space to general surgery and to eliminate those specialties which are covered in more detail elsewhere.

The text maintains its usual standard of excellence. However, in several instances subjects of increasing significance in surgery have been dealt with briefly. In particular, venous thrombosis, thrombo-embolism, peripheral vascular surgery, and diseases of the colon are allotted less space than their relative importance warrants.

STANLEY SIMON, M.D.

*SURGERY IN WORLD WAR TWO.* Neuro-surgery—Volume 2. Department of the Army. Office of the Surgeon General, Wash., D. C., 1959. \$7.00

This volume is concerned with the treatment of spinal cord and peripheral nerve injuries during the second world war. As in the first volume which was concerned with head injuries and administrative data the list of contributors—Woodhall, Spurling, Prather, and others—is distinguished and able. The writing is again lucid and although the illustrations leave something to be desired they are profuse. The author's topics overlap considerably and the differences of opinion are often marked and stimulating.

It is emphasized throughout that injuries to nervous tissue caused by high velocity missiles are more complicated and difficult than those encountered in civilian practice. Such military factors as universal delayed closure of wounds cause further differences. However, determined attack on peripheral cases when there was considerable loss of nervous tissue showed that only a few were completely hopeless. Detailed descriptions of the methods of nerve mobilization necessary for suture are given.

The care of paraplegics is described with particular attention to the urologic and decubitus problems. Surgery of herniated discs was commented on only briefly. These operations were done commonly early in the war but although initial surgical results seemed to be good it was found that over 70% were not improved sufficiently to be retained in the Army following surgery. Conservative therapy seemed to be no better and 80% of those so treated had to be separated from the service. Surgery, therefore, was performed only in special circumstances.

The type of surgery described in the book is necessarily for conditions which require long terms of post-operative evaluation. Such an evaluation is not given because the contributors have long since been out of the Army. Another volume by Barnes Woodhall does give an account of the notable attempt to follow peripheral nerve injuries.

THOMAS C. MCOSKER, M.D.

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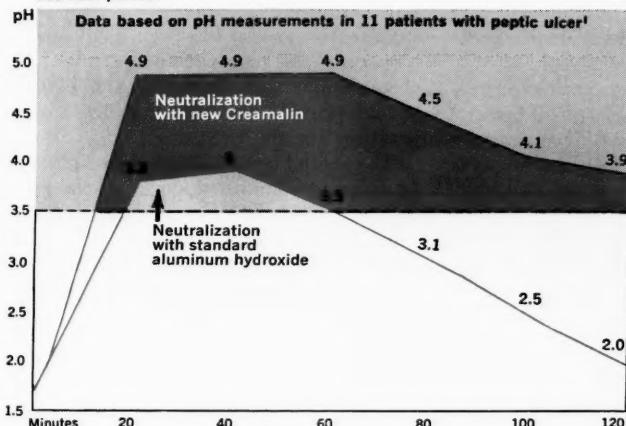
Tuesday, November 29-Friday, December 2.

Clinical Session of the American Medical Association, Washington, D. C.

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1. Data in the files of the Department of Medical Research, Winthrop Laboratories. 2. Hinkel, E. T., Jr.; Fisher, M. P., and Tainter, M. L.: *J. Am. Pharm. A.* (Scient. Ed.) 48:384, July, 1959.

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## THE WASHINGTON SCENE

### A Summary Report Prepared by the Washington Office of the American Medical Association

REPRESENTATIVES of the medical and health professions, the federal government and national civic groups are co-operating in development of a program for starting the general use of the Sabin live-virus poliomyelitis vaccine next year.

Shortly after clearing the Sabin vaccine for general use, Leroy E. Burney, M.D., Surgeon General of the Public Health Service, asked 23 nongovernment organizations to designate members to serve on a Surgeon General's Committee on Poliomyelitis Control.

An Agenda Committee met with PHS officials in Atlanta Oct. 11 and 12 and drafted a basic agenda for a meeting of the Control committee in midwinter. At the Atlanta meeting, preliminary consideration also was given to administrative and technical problems involved in use of the live-virus vaccine developed by Albert B. Sabin, M.D., of Cincinnati.

The Agenda committee was made up of representatives of the American Medical Association, American Academy of General Practice, American Academy of Pediatrics, Association of State and Territorial Health Officers, Children's Bureau and the National Foundation.

The Sabin vaccine is not expected to be available in substantial quantities before mid-1961.

The chief question is whether the vaccine—which is given orally in the form of pills, liquid or candy—will be administered on individual or mass community basis. The PHS special committee that recommended approval of the oral vaccine said that the community basis would be better.

"Because of the unique nature of live poliovirus vaccine, with its capacity to spread the virus in a limited manner to non-vaccinated persons, the committee cannot make recommendations for manufacture without expressing concern about the manner in which it may be used," the special committee said.

"The seriousness of this responsibility can be illustrated, for example, by the known potentiality of reversion to virulence of live poliovirus vaccine strains, and the possible importance of this feature in the community if the vaccine is improperly used.

"For example, the vaccine has been employed

largely in mass administrations where most of the susceptibles were simultaneously given the vaccine, thus permitting little opportunity for serial human transmission; or, it has been administered during a season of the year when wild strains have usually shown limited capacity for spread. This experience should provide the basis for developing useable practices for the U.S.A."

The special committee also said attention should be given to administration to special groups, such as very young children, pregnant women, and susceptible adults.

"Even more important is the planned continuation of this program as long as necessary to achieve and maintain the required results," the committee said.

The committee was headed by Roderick Murray, M.D., of the National Institutes of Health. Its other members were four M.D.'s and one Ph.D., all of whom were connected with universities except for one M.D. from the PHS's Communicable Disease Center at Atlanta.

Neither the committee nor Dr. Burney anticipated that the live-virus vaccine would replace the killed-virus Salk vaccine used since April, 1955.

"It appears probable that only a unified national program which utilizes each of the available types of vaccine to its best advantage can accomplish the total prevention of outbreaks," the committee said.

Dr. Julian P. Price of Florence, S. C., chairman of the A.M.A.'s Board of Trustees, predicted the live-virus vaccine "will be one more powerful weapon against an ancient and crippling disease." He said that physicians "have conscientiously pushed immunization with the Salk vaccine and now, with this new vaccine, the profession is hopeful that even better results can be achieved."

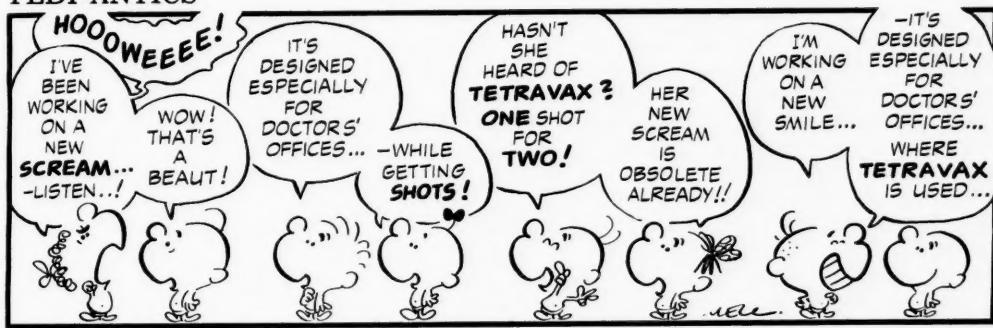
\* \* \*

Five states were ready soon after the effective date of October 1 to submit plans for participation in the federal-state program of health care for the needy and near-needy aged persons which recently was enacted into law. The states were Arkansas, Michigan, New Mexico, Oklahoma and Washington.

*concluded on page 690*

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### THE WASHINGTON SCENE

*concluded from page 688*

As of early October, another twenty-five states were preparing to consider legislation to set up such a program or had indicated a willingness to proceed without new legislation. They were Alabama, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Kentucky, Louisiana, Massachusetts, Montana, Nevada, New Jersey, North Dakota, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, West Virginia, Virginia and Wyoming.

Arthur S. Flemming, secretary of Health, Education and Welfare, urged all states to take part in the program as soon as possible. But he also said he hopes that Congress in the next session will approve a Republican plan for a supplementary federal-state program to help provide private health insurance for elderly persons who cannot meet their medical expenses.

It appears that the issue probably will arise in Congress next year because some Democrats also have said they will again sponsor legislation that would provide health care for aged persons through the Social Security system.

\* \* \*

The A.M.A. has launched a "comprehensive study and action program" to guide Americans in spending their health-care dollars more wisely.

The A.M.A.'s new Commission on Medical Care

### RHODE ISLAND MEDICAL JOURNAL

Costs has set out "to find answers to the many questions being raised about medical care costs and to present the findings frankly and forthrightly to the medical profession and to the public."

The program is "dedicated to promoting the highest quality health care at the lowest cost." Louis M. Orr, M.D., of Orlando, Florida, chairman of the commission, said that "any barrier that stands in the way of this objective should be removed—immediately."

One of these barriers is money wasted on ineffective non-prescription or over-the-counter drug products, such as vitamins, food fads, and rheumatism and arthritis remedies. A.M.A.'s Council on Foods and Nutrition has estimated that much of the estimated \$350 million spent annually on self-prescribed vitamins is wasted.

The A.M.A. is urging physicians to alert their patients and the public to the latent dangers involved in self-prescribing and to the folly of throwing their health-care dollars away on quackeries.

On another front in the war against quackery, Food and Drug Commissioner George P. Larrick reported that during the past twelve months the FDA had seized falsely promoted vitamins, minerals and other so-called "health foods" valued in excess of 1.5 million dollars. He said that the amount of misinformation, pseudo-science and plain "hokum" on health care reaching the public through books and magazine articles is increasing.



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